PIT AND QUARRY

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COPY 3
CENTRAL SERIAL RECORD

JUNE, 1942

FOR 25 YEARS THE LARGEST PRODUCER CIRCULATION IN THE FIELD

LUDLOW-SAYLOR

CONTROLLED-TEMPER SUPER-LOY WOVEN WIRE SCREENS

for super-severe service

●

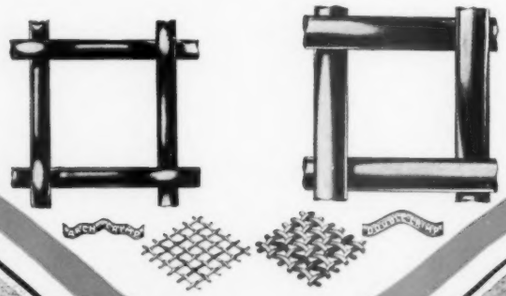
SUPER-HARD, SUPER-TOUGH, SUPER-STRONG

CONTROLLED-TEMPER SUPER-LOY WOVEN WIRE SCREENS

withstand abrasion longer—

endure vibration better—

resist fatigue to the utmost



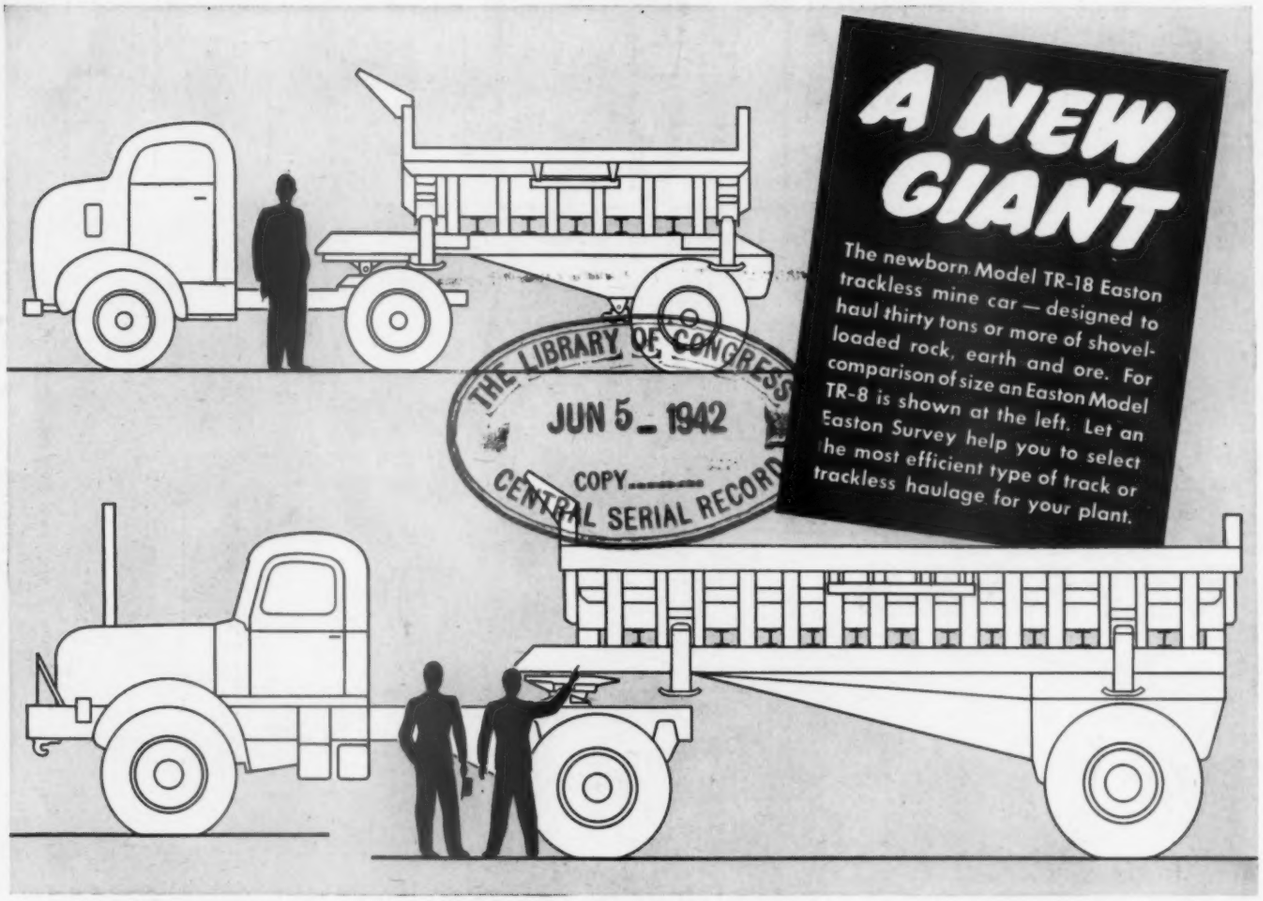
The background at top of page shows the "Perfect" Double-Crimp Weave.

The small cuts in the center panel compare Arch-Crimp Weave and Double-Crimp Weave.

The border at foot of page shows "Perfect" Double-Crimp Steel Wire Cloth which has been hot-dip galvanized after weaving.

Samples on request.

The LUDLOW-SAYLOR WIRE COMPANY
SAINT LOUIS


A NEW GIANT
The newborn Model TR-18 Easton trackless mine car — designed to haul thirty tons or more of shovel-loaded rock, earth and ore. For comparison of size an Easton Model TR-8 is shown at the left. Let an Easton Survey help you to select the most efficient type of track or trackless haulage for your plant.
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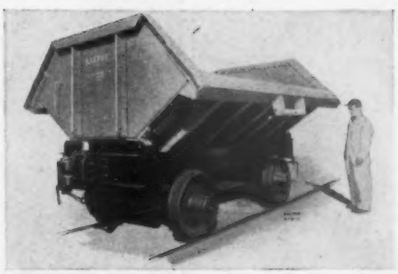


Wide experience with both track and trackless haulage enables Easton engineers to make unbiased recommendations on the type of equipment best suited to your service. Above is shown the famous Easton Phoenix Quarry Car, doorless, two-way side-dump. Below: the Easton Won Way Car with automatic down-folding door. Easton Cars are Timken Bearing Equipped.

The new giant **TR-18** trackless mine car is designed to haul 30-ton payloads in pit, mine and quarry service. Units of this same basic design, in several smaller capacities up to 25 tons, have established spectacular performance records (available on request). The new giant is one more example of *non-stop* progress in Easton haulage engineering.

The **TR-18s**, loaded by 4-5 yard dippers, will dump into a receiving hopper or crusher at a fixed point where an Easton automatic electric overhead hoist will be installed. These big, new semi-trailers are powered by huge Diesel-engined tractors for maximum speed and efficiency, and for traction sufficient to negotiate substantial grades against the load.

In designing this new trailer Easton engineers employed patented basic features which have been proved *on the job* in the heaviest, most gruelling type of rock-handling service. Twenty-five years of experience with similar problems are back of every new development throughout the trailer and container. The outstanding feature is, of course, the famous patented Easton-Phoenix doorless, side-dump body.

Tonnage to Fit Your Plant

Let Easton engineers answer for you the problem of *Tonnage to Fit Your Plant* —for speed today and low costs tomorrow. Easton engineers will make a free survey of your haulage system, without obligation. Write for information.

EASTON

EASTON CAR & CONSTRUCTION COMPANY, EASTON, PA.

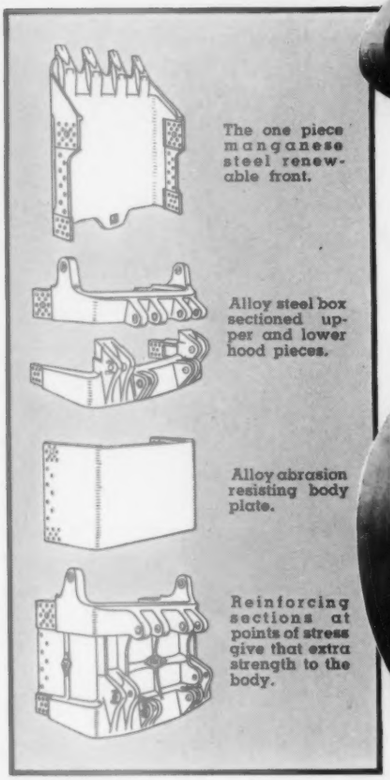
PIT AND QUARRY, June, 1942, Vol. 34, No. 12. Published monthly by the Complete Service Publishing Company, 538 South Clark Street, Chicago, Ill. Subscription price $1 for 1 year in the U. S. and possessions, Canada, Central and South America; elsewhere $1 additional for each year. Single copies 25 cents. Entered as second-class matter February 28, 1932, at the Post Office at Chicago, Ill., under the Act of March 3, 1897.

STRENGTH

—possible only with welded construction

PMCO

WELDED DIPPERS

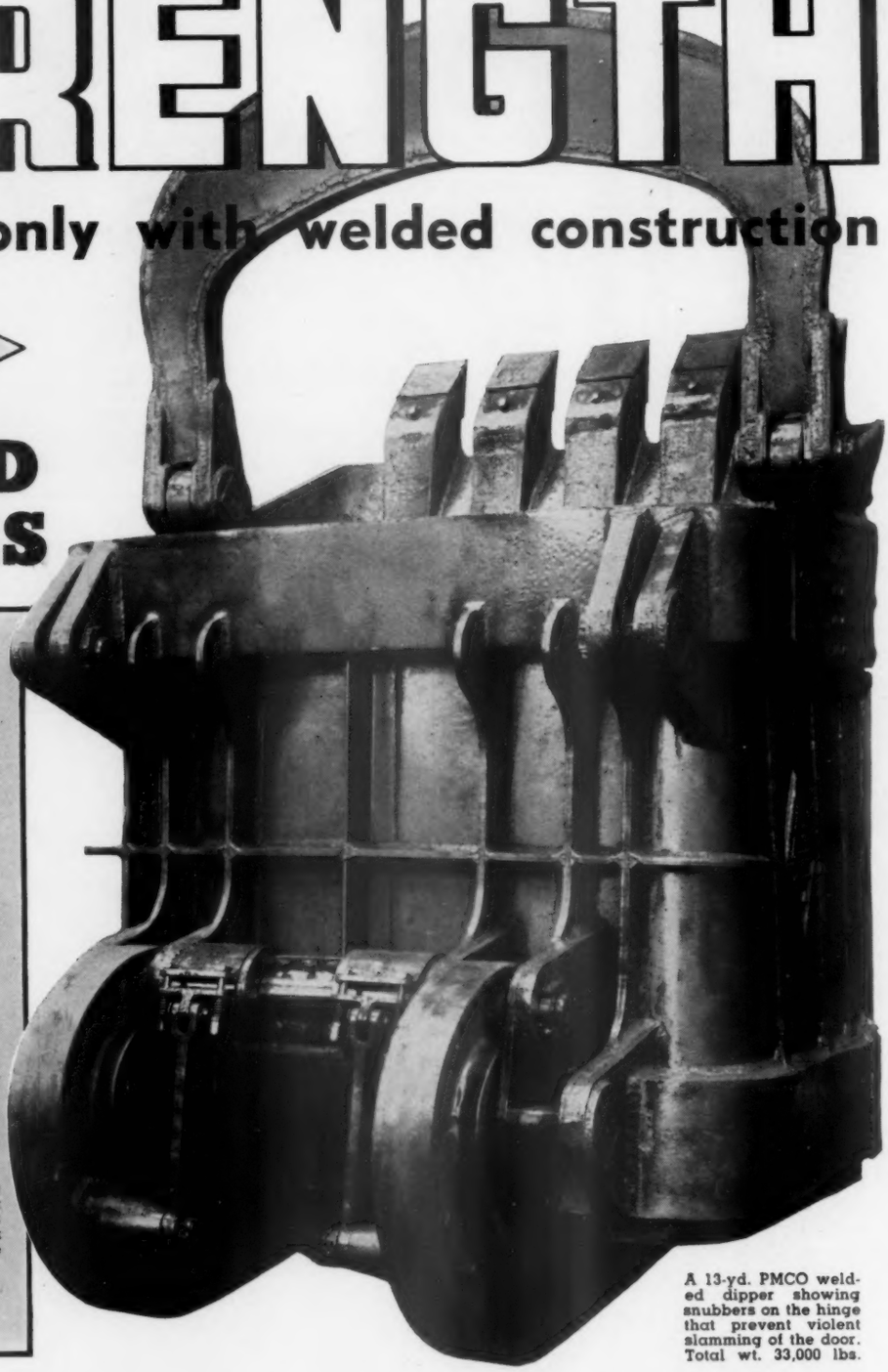


The one piece manganese steel renewable front.

Alloy steel box sectioned upper and lower hood pieces.

Alloy abrasion resisting body plate.

Reinforcing sections at points of stress give that extra strength to the body.



A 13-yd. PMCO welded dipper showing snubbers on the hinge that prevent violent slamming of the door. Total wt. 33,000 lbs.

These sections of manganese steel and steel alloys are welded together to provide unusual strength—strength proven by the records of many PMCO Welded Dippers in use today. Through years of experience in building large size welded dippers, our engineers have made the outstanding feature of the modern PMCO Welded Dipper its STRENGTH.

We operate the largest and most complete manganese steel foundry in the United States.

PETTIBONE MULLIKEN CORPORATION

Established 1880

4710 West Division Street, Chicago, Illinois

Every hour of lay-up time saved brings Victory a little closer . . .

A Message to Mack Owners on Truck Maintenance

It's going to be increasingly difficult to replace trucks during the critical days that lie ahead.

You who own Mack trucks have the advantage of the extra durability that's built into them. (That Macks *do* last longer is proved by figures which show that 7 out of every 10 Macks bought ten years ago are still in profitable use. *R. L. Polk survey, as published in Automotive News.*) But you can't hope to get the most out of your Macks unless you have them serviced promptly—regularly—at the nearest Mack factory branch or Mack dealer.

Consult your local Mack service manager for helpful, constructive advice on how best to conserve your truck equipment. Ask him about the Mack "Preventive Maintenance Plan," a practical system of periodic inspection and adjustment, which will save you money on repair bills—keep your trucks on the road for extra thousands of miles.

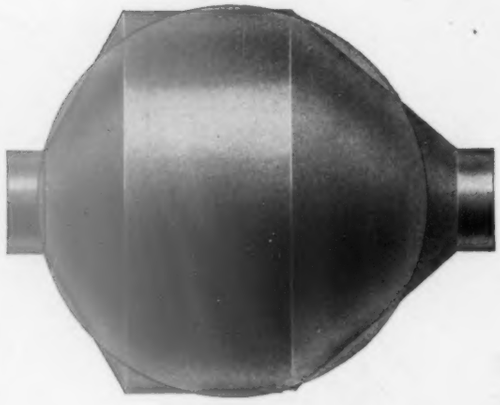
Remember, a truck is something more than a private investment in time of war. As a part of our vital transportation system, it is a public responsibility. Let us help you "keep 'em rolling."

MACK TRUCKS, INC., LONG ISLAND CITY, N. Y.

THE MOST COMPLETE LINE OF TRUCKS IN THE WORLD—
1 TO 45 TONS AND ALL HEAVY DUTY!

Mack

JUST PUBLISHED . . . .
BULLETIN ON
GRINDING AND PULVERIZING



The Mill Built Like
a Sphere Requires
Less Iron and Steel

Also Less Power to Perform
a Given Grinding Job

Bulletin 13-D Tells Why
Write For Your Copy

Contains Information on

Wet and Dry Grinding.

Methods of Control.

Details of Construction.

Specifications on Sizes 2-ft. to 12-ft. Diameter with Weights, Ball Charges, Power Requirements and Capacities.

HARDINGE
COMPANY, INCORPORATED - YORK, PENNSYLVANIA

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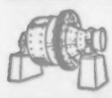

CONICAL MILLS

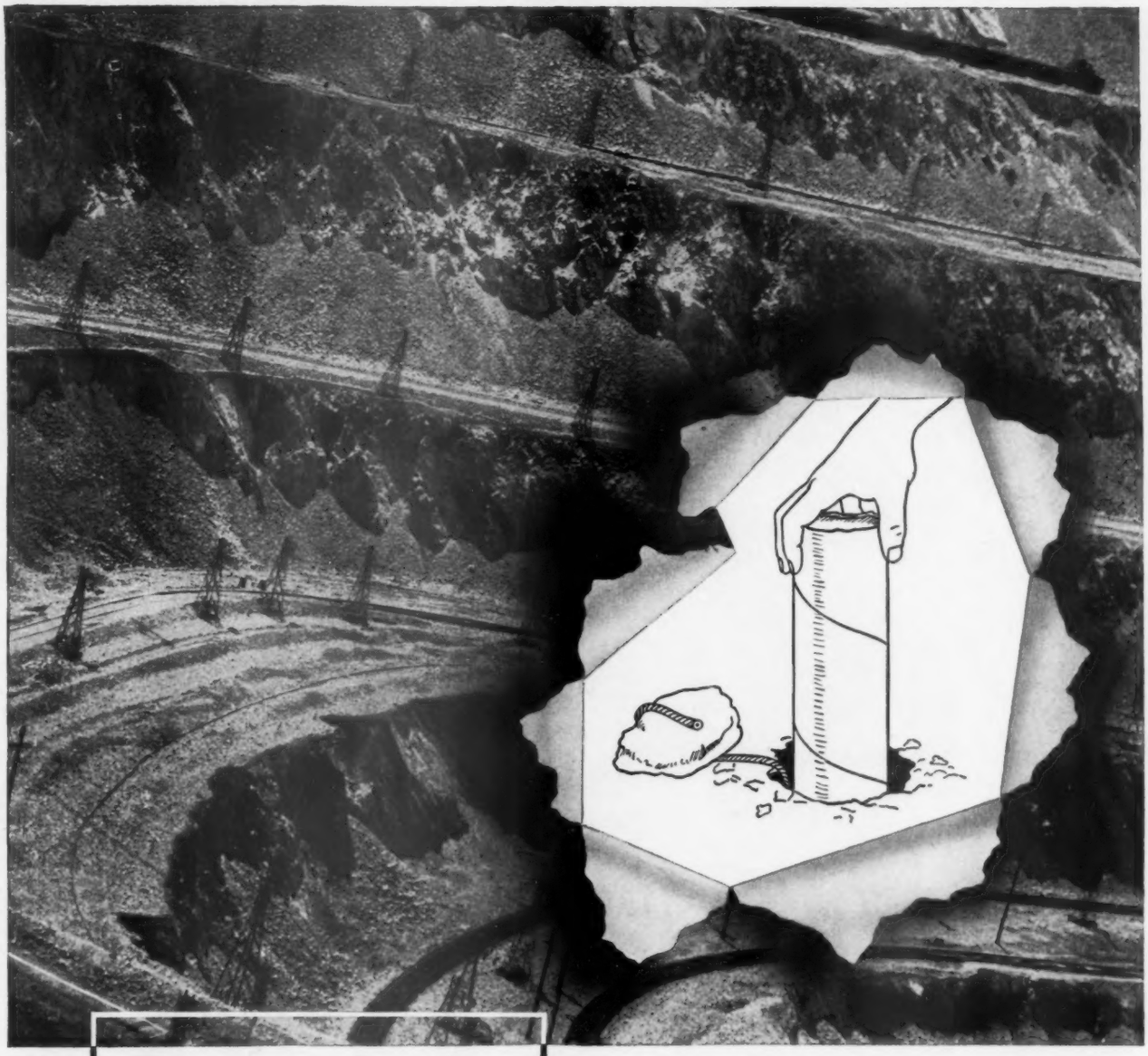
COUNTER CURRENT CLASSIFIERS

THICKENERS CLARIFIERS

RUGGLES-COLES DRYERS

CONSTANT WEIGHT FEEDERS

TUBE ROD AND BATCH MILLS



Easy to load– no sensitive detonators

Only the *bottom cartridge* in any hole must be punched and laced when Primacord is the detonating agent! Succeeding cartridges are merely guided into position, as is. *Loading is easier.*

Insensitive to fire, friction and ordinary shock, Primacord must be *deliberately* detonated by fuse and cap or electric blasting cap. This touches off blasts in an entire network of holes . . . almost instantaneously.

Primacord does away with the need of a blasting cap in the bore hole. There are no sensitive detonators exposed to impact or abrasion. *Loading is safer!*

Primacord offers many other advantages in safety and savings. Try it for your work.

THE ENSIGN-BICKFORD COMPANY
SIMSBURY, CONNECTICUT
Manufacturers of Safety Fuse since 1836

PB-45

PRIMACORD-BICKFORD DETONATING FUSE

HAULING JEEPS ACROSS RAVINES

Another Job for Wickwire Rope

There are many *extra* jobs that wire rope must do today. The Army, the Navy, and the Liberty Fleet need vast quantities of wire rope.

This points up the message: MAKE YOUR WIRE ROPE LAST LONGER.

When wire rope fails too soon, it wastes badly needed steel, labor and time. If by care you can make *your* wire rope last longer, you are helping to win the war.

When you *do* need wire rope, be sure to get the correct type and size for your service. Our representatives will help you determine the best Wickwire Rope, preformed or Wissco lay, for your use—and after installation will help you get longest life and most economical operation from it.

The reason for the long life of *Wickwire* rope lies in our controlled production, every step of the way from ore pile, to blast furnace, to open hearth, to finished rope.

• • •

Have you a copy of the book "Know Your Ropes"? It will help *you* get longer rope life. More than 25,000 wire rope users all over the world regard it as the authoritative guide to wire rope economy. For your free copy, write Wickwire Spencer Steel Company, 500 Fifth Avenue, New York, N. Y.

WHEN WIRE ROPE LEAVES ITS IMPRINT in sheave or drum groove, there is a filing action on the rope at every start and stop. Grooves having the slightest impressions should be machined and polished. This and forty more rope life-savers are pictured and described in "Know Your Ropes."

SEND YOUR WIRE ROPE QUESTIONS TO WICKWIRE SPENCER

WICKWIRE SPENCER STEEL COMPANY

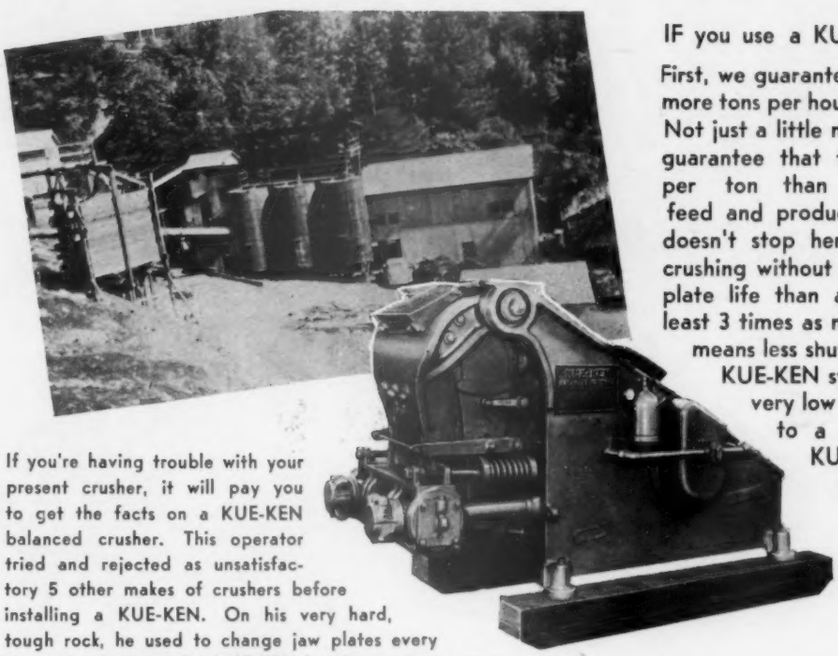
WICKWIRE ROPE

Sales Offices and Warehouses: Worcester, New York, Chicago, Buffalo, San Francisco, Los Angeles, Tulsa, Chattanooga, Houston, Abilene, Texas, Seattle. Export Sales Department: New York City

WISSCO PRODUCTS

There's More Than One Way to

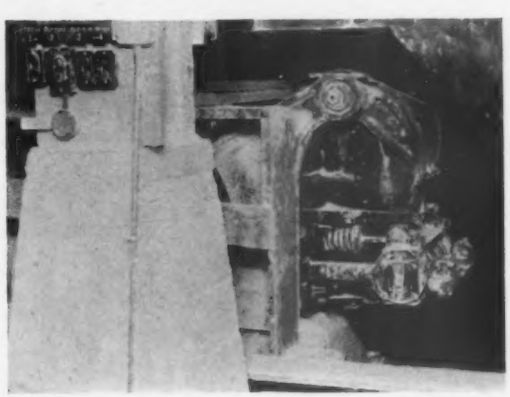
INCREASE PRODUCTION



If you're having trouble with your present crusher, it will pay you to get the facts on a KUE-KEN balanced crusher. This operator tried and rejected as unsatisfactory 5 other makes of crushers before installing a KUE-KEN. On his very hard, tough rock, he used to change jaw plates every 3 or 4 weeks. With his KUE-KEN he changes jaws every 12 to 16 weeks. Recently, in enlarging his plant, this operator installed his second and larger KUE-KEN.

IF you use a KUE-KEN balanced crusher—

First, we guarantee a KUE-KEN balanced crusher to crush more tons per hour than any other crusher of equal jaw size. Not just a little more, but 2 to 5 times more! Second, we guarantee that the KUE-KEN will use less horsepower per ton than any other crusher where size of feed and product are equal in both cases. KUE-KEN doesn't stop here either. The KUE-KEN principle of crushing without abrasion gives 5 to 10 times more jaw plate life than any other crusher. (We guarantee at least 3 times as much or a pair of jaw plates free!). This means less shut down time for changing jaw plates. The KUE-KEN system of perfect, sealed lubrication plus very low bearing pressures has slowed wear down to a walk. Since the introduction of the KUE-KEN crusher three years ago, there has not been a single bearing failure on jobs all over the world under every condition. No time lost for bearing trouble.



If your power supply is limited, you can do as this operator did. He installed a KUE-KEN that weighs half as much as his previous crusher. It uses 16 horsepower compared to 15 horsepower previously used, but with his KUE-KEN he crushes 5 times as much and finer, too!

At the right we show a gravel plant using one of the first KUE-KEN crushers built. The No. 50 KUE-KEN that is used at this plant weighs 12,000 lbs. It replaced a well-known gyratory weighing 36,000 lbs. This KUE-KEN is being used to crush very hard river gravel for road work. Jaw settings vary from 1" to 5/8" depending on product required. With his previous crusher he used to have to shut down every 3 hours to cool off the bearings. His KUE-KEN runs cool all day without interruption.

Take advantage of our free crushing test service. We will crush your samples in KUE-KEN crushers at our plant and furnish you with an accurate screen analysis or return the crushed material to you. There's no obligation attached to this service—We do ask that you send samples freight prepaid.

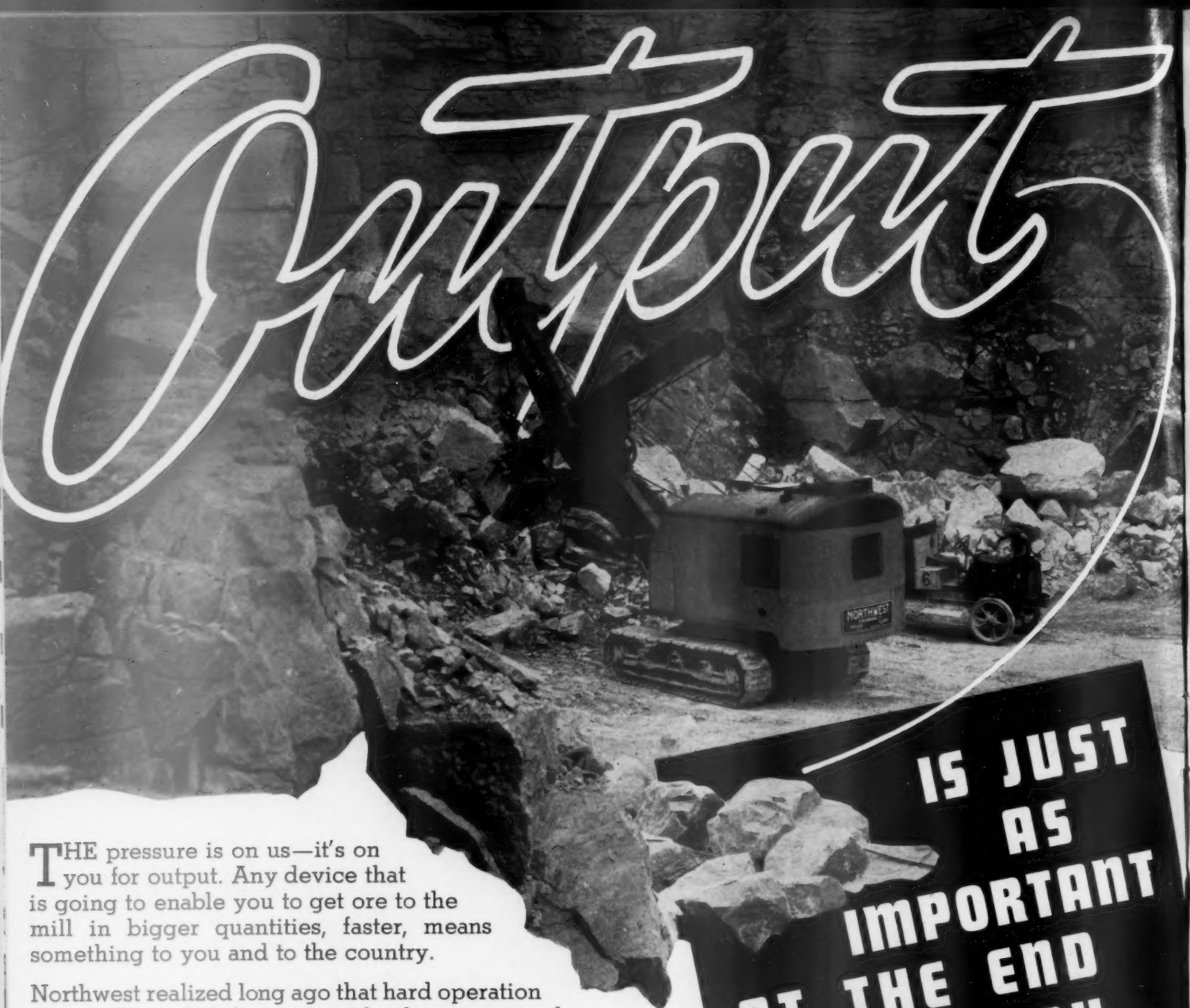
Write for bulletin 602 for complete details on the KUE-KEN crushers.

402 CHESTNUT STREET, OAKLAND, CALIF.

STRAUB MFG. CO.

Kue-Ken Balanced Crushers	Rib Cone Ball Mills	Screenwheel Classifiers
Overhead Eccentric Crushers	Feeders	Amalgamation Barrels
Concentrating Tables	Spiral Classifiers	Standard or Sectionalized

Output



IS JUST AS IMPORTANT AT THE END OF THE DAY AS AT THE BEGINNING!

THE pressure is on us—it's on you for output. Any device that is going to enable you to get ore to the mill in bigger quantities, faster, means something to you and to the country.

Northwest realized long ago that hard operation reduced a machine's output as the day progressed—and the result was the "feather-touch" Clutch Control. This device turns the power of the engine to actuate the heavy drum clutches. It is purely mechanical. There is nothing to leak, no high pressure lines, no complicated adjustments, it is unaffected by weather,—just a simple band mechanism so sensitive that the feel of the bucket is always present. Release is positive and if desired it can be disconnected so there is no possibility of shut down due to failure of controls.

The "feather-touch" Control reduces operator fatigue and permits the maintenance of high output *all day long.*

NORTHWEST ENGINEERING COMPANY
1822 Steger Building, 28 East Jackson Boulevard, Chicago, Illinois

It's a real hard rock miner!

NORTHWEST

TELSMITH Gravel Plant

goes all out

FOR WIN-THE-WAR CONSTRUCTION

Telsmith Jaw Crusher

Telsmith Sand Tanks

Telsmith Gyrasphere

★ Minus and plus ¾″ and minus 1½″ gravel, and sand is in demand for war projects in the vicinity of Pawtucket, R. I. Starting operation Nov. 1, 1941, this new Telsmith equipped gravel plant of J. J. McHale & Sons near Pawtucket is turning it out at about 125 to 150 tons per hr.

A 1¼ cu. yd. shovel and two end dump trucks feed raw bank run gravel into an 8 cu. yd. hopper having a railroad rail grizzly that rejects the few oversize boulders. A 30″ x 5′6″ Telsmith Reciprocating Plate Feeder feeds material out of hopper and over a No. 450 Telsmith Rotary Grizzly with 3¼″ spaces. Plus 3¼″ goes to an 18 x 30 Telsmith Roller Bearing Jaw Crusher. A 30″ x 73′ belt conveyor takes minus 3¼″ direct from the grizzly, and from the jaw crusher, to a 4′ x 10′ Telsmith Single Deck Pulsator. Plus 1½″ from this scalping screen goes into a No. 36 Telsmith Gyrasphere Crusher; and when crushed returns to the 30″ primary conveyor via an 18″x48′6″ conveyor.

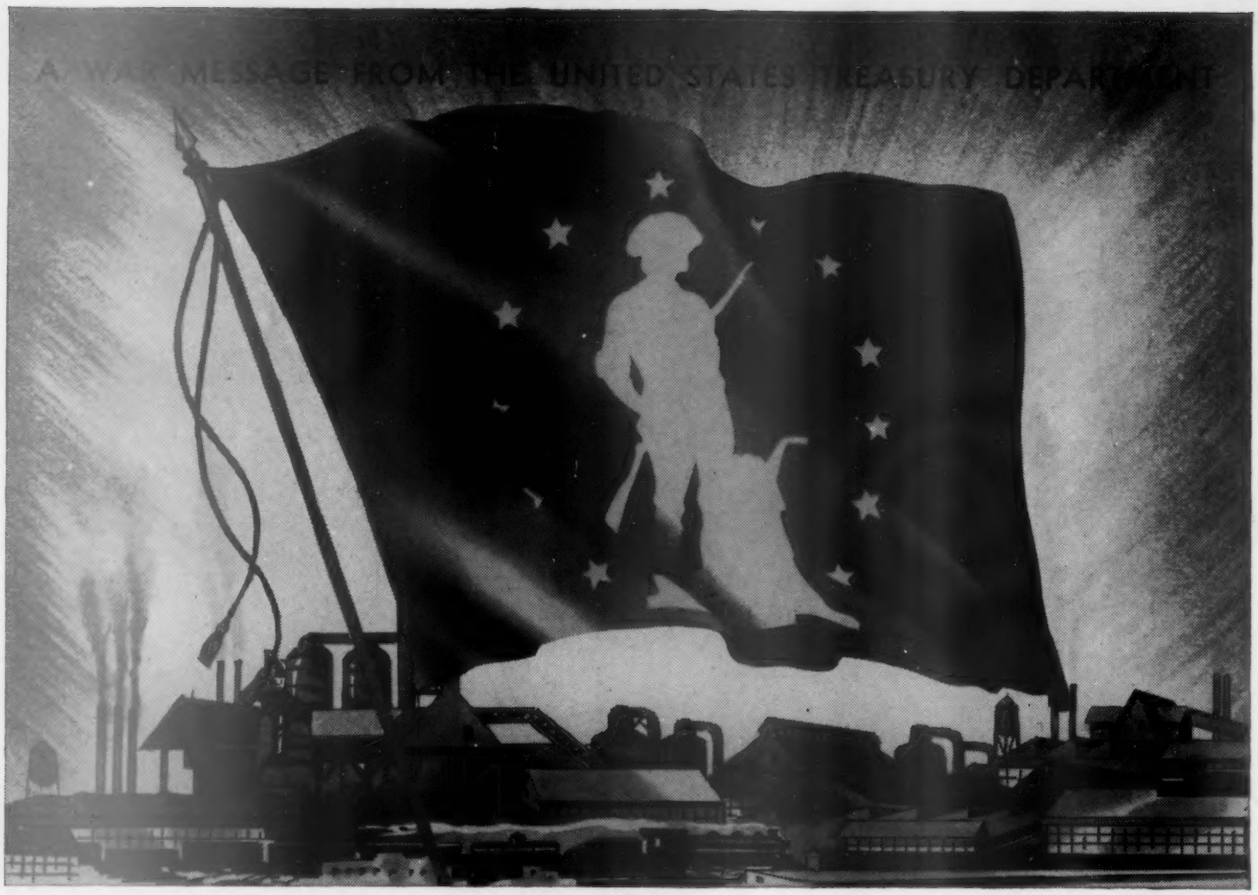
Minus 1½″ from the scalping screen goes via a 24″ x 186′6″ finished product conveyor to a 5′ x 12′ Telsmith 2-Deck Pulsator for washing and sizing. Sand is flumed to two No. 8 Telsmith Sand Tanks on a tower independent of main plant. The two sizes of gravel are deposited in two 20′ diam. concrete-block silo bins, fitted with bin gates for loading into trucks.

Why do so many operators with war construction jobs depend on Telsmith? Because Telsmith equipment can be pushed to *top speed* and *will produce*. Telsmith Engineers' plant planning is sound. Telsmith Service is fast. *Get Bulletin G-15.* G-10

SMITH ENGINEERING WORKS, 504 E. CAPITOL DRIVE, MILWAUKEE, WISCONSIN

Cable Addresses: Sengworks, Milwaukee—Concrete, London

Room 1604—50 East 42nd St. New York City	211 W. Wacker Drive Chicago, Ill.	713 Commercial Trust Bldg. Philadelphia, Pa.	19-21 Charles St. Cambridge, Mass.	Borchert-Ingersoll, Inc. St. Paul, Minnesota	Brandeis M. & S. Co. Louisville, Ky.
Charleston Tractor & Eqpt. Corp. Charleston, W. Va.	Roanoke Trac. & Eqpt. Co. Roanoke, Va.	North Carolina Eqpt. Co. Raleigh and Stateville, N. C.	Wilson-Weesner-Wilkinson Co. Knoxville and Nashville, Tenn.	G. F. Seeley & Co. Toronto, Ont.	



Next to the Stars and Stripes . . .

AS PROUD A FLAG AS INDUSTRY CAN FLY

Signifying 90 Percent or More Employee Participation in the Pay-Roll Savings Plan

IT doesn't go into the smoke of battle, but wherever you see this flag you know that it spells Victory for our boys on the fighting fronts. To everyone, it means that the firm which flies it has attained 90 percent or more employee participation in the Pay-Roll Savings Plan . . . that their employees are turning a part of their earnings into tanks and planes and guns *regularly,* every pay day, through the systematic purchase of U. S. War Bonds.

You don't need to be engaged in war production activity to fly this flag. Any patriotic firm can qualify and make a vital contribution to Victory by making the Pay-Roll Savings Plan available to its employees, and by securing 90 percent or more employee participation. Then notify your State Defense Savings Staff Administrator that you have reached the goal. He will tell you how you may obtain your flag.

If your firm has already installed the Pay-Roll Savings Plan, now is the time to increase your efforts: (1) To secure wider participation and reach the 90-percent goal; (2) to encourage employees to increase their allotments until 10 percent or more of your gross pay roll is subscribed for Bonds. "Token" allotments will not win this war any more than "token" resistance will keep our enemies from our shores, our homes. If your firm has yet to install the Plan, remember, TIME IS SHORT.

Write or wire for full facts and literature on installing your Pay-Roll Savings Plan now. Address Treasury Department, Section D, 709 12th St., NW., Washington, D. C.

Make Every Pay Day "Bond Day"

U. S. WAR Bonds ★ Stamps

This Space is a Contribution to Victory by

PIT AND QUARRY

U. S. GOVERNMENT PRINTING OFFICE 16—27879-1

Form No. DSS-BP-4

The Nation's Quarries Are Remembering Pearl Harbor

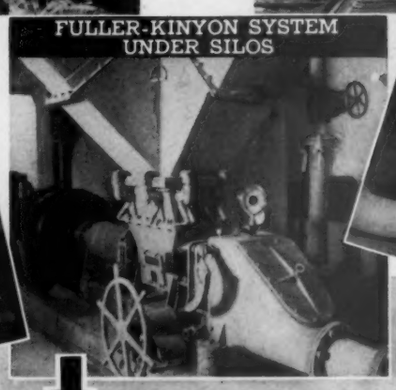
Armed with a grim determination, the quarries and cement plants of the Nation have mustered their man and machine power in an all-out war effort. A powerful influence on the final results are the hundreds of MARIONS actively engaged in digging and loading these vital materials. Maximum yardage is Marion's way of saying, "VICTORY will be ours."

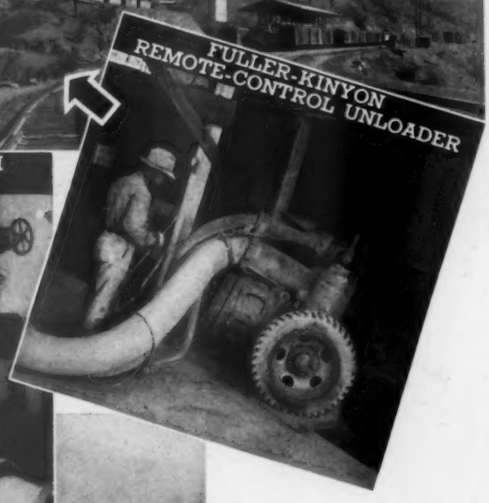
THE MARION STEAM SHOVEL COMPANY
MARION, OHIO, U. S. A. *Offices in all principal cities*
Serving industry since 1884

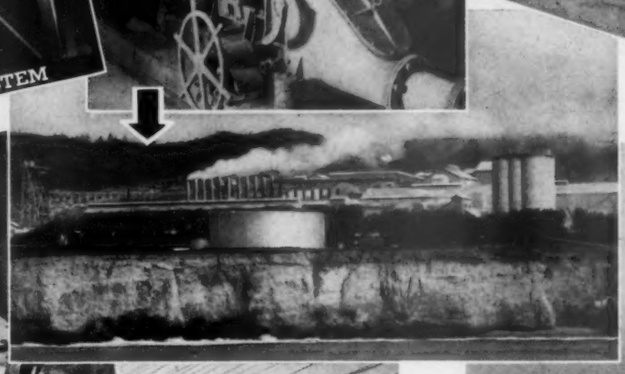
MARION

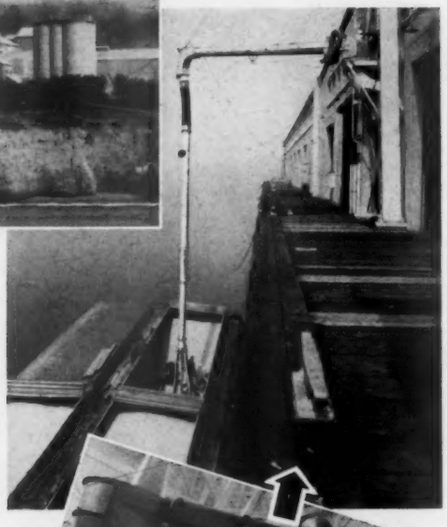
SHOVELS • DRAGLINES • CLAMSHELLS
CRANES • PULL-SHOVELS • WALKERS
Gasoline — Diesel — Electric — ¾ cubic yard to 35 cubic yards

TO SPEED UP YOUR CONVEYING









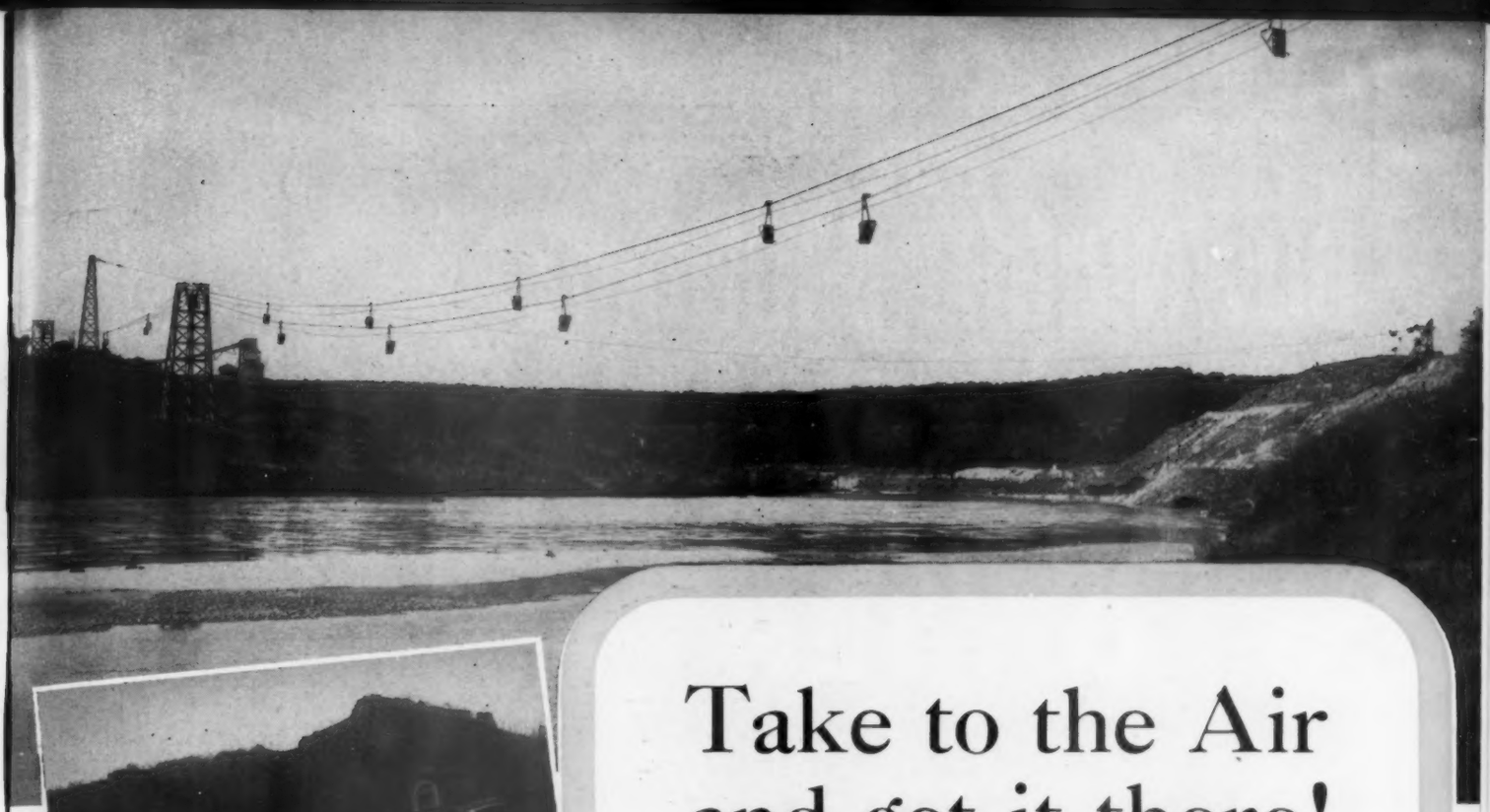
If you're building a new plant or modernizing an old one, and want to speed up production, may we recommend that you get in touch with us. We'll be glad to have one of our sales engineers call to see you. With his ability to make a survey of your requirements, plus the many years of research and engineering by the company, we feel quite certain we can solve your problems and, to your advantage.

Fuller experience covers many years and phases of conveying dry pulverized, fine, crushed and granular materials, pneumatically through pipe lines. May we hear from you . . . . we're here to help.

FULLER COMPANY
CATASAUQUA—PENNSYLVANIA
CHICAGO—Marquette Bldg. SAN FRANCISCO—Chancery Bldg.

G-24

FULLER-KINYON, FLUXO, AND AIRVEYOR CONVEYING SYSTEMS · · · · ROTARY FEEDERS AND DISCHARGE GATES
ROTARY AIR COMPRESSORS AND VACUUM PUMPS · · · · AIR-QUENCHING COOLERS · · · · BIN SIGNALS



U·S·S AERIAL *Wire Rope* TRAMWAYS

Take to the Air and get it there!

HERE, in U·S·S Aerial Wire Rope Tramways, we offer a system for transporting material that has proved its ability to deliver the goods regardless of ground barriers. Dependable, efficient and low in operating cost, it fills the bill where other methods of hauling and transportation are too expensive, too slow or just plain impossible.

Through inaccessible or rough terrain, over streams and other obstacles it moves as the crow flies. Fast, direct, independent of weather, it short-cuts distance and lowers handling cost. Snow, ice, rain or mud can not halt its operation.

This system is not only more reliable, but because of definite labor and power savings is economical as well. Operating costs may be brought below 2¢ or 3¢ per ton-mile, exclusive of amortization. The more difficult the ground conditions, the greater comparative savings it insures.

U·S·S Aerial Tramways have been built in lengths ranging from a few hundred feet to many miles, with capacities from 1½ to 300 tons per hour. The many types of U·S·S Aerial Tramways available provide a complete range to suit practically any condition of operation and service. Our engineering staff will gladly assist you in the selection of the system that will serve you most efficiently.

AMERICAN STEEL & WIRE COMPANY
Cleveland, Chicago and New York

COLUMBIA STEEL COMPANY
San Francisco

United States Steel Export Company, New York

UNITED STATES STEEL

FOR

DOWNRIGHT ECONOMY

PER YARD OF STOCKPILE MATERIAL HANDLED, THE

BUCKET LOADER

IS 'WAY OUT IN FRONT, EVERY TIME!

Haiss has specialized, from the start, in serving operators who based their equipment purchases on net-economy-over-years-of-service. When this war is over every sand, gravel and stone producer is going to be compelled to strive for net-handling-economy as a basis of operating profit. With both highly-mobile "wheel" types and creeper model machines, Haiss is going to have "preferred" equipment in all capacities from 2 to 8 yds. per minute. Catalogs on request.

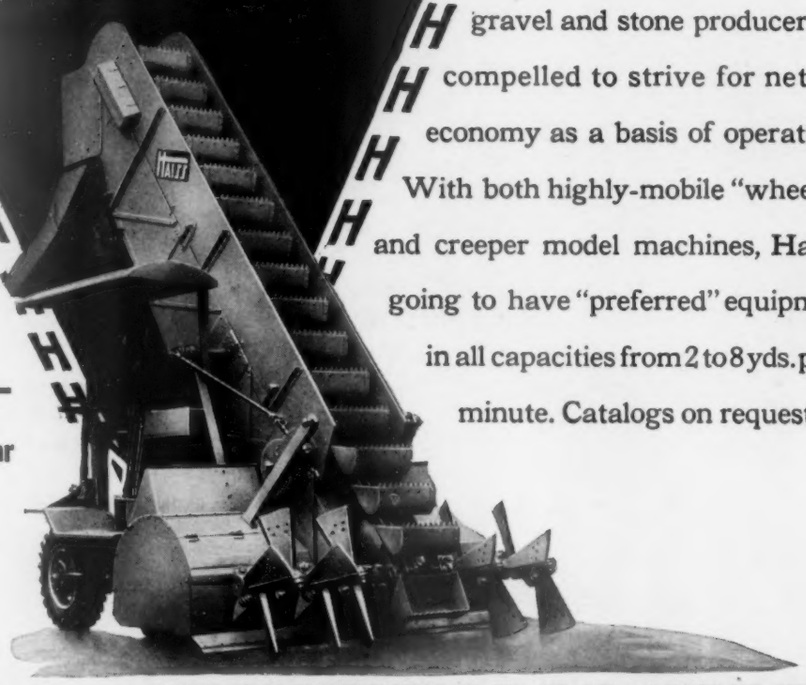
MORE WORK per Lb. of Weight

MORE CAPACITY per Dollar Invested

MORE OUTPUT per Gallon of Fuel

MORE YARDS per Maintenance Dollar

MORE YEARS of Every-day Service



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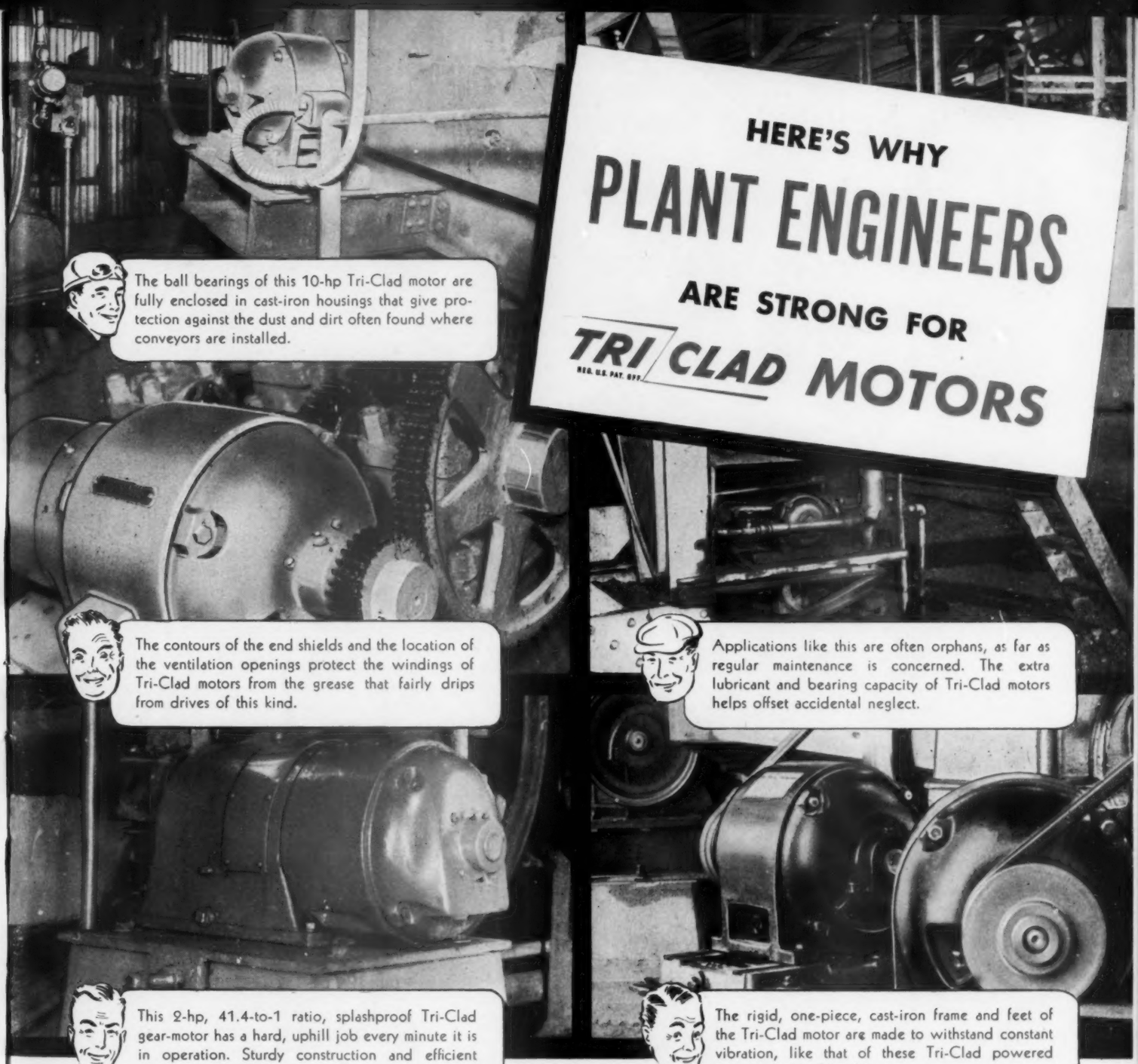
HAISS QUALITY EQUIPMENT FOR 50 YEARS 1892 ★ 1942

HAISS

PORTABLE CONVEYORS ★ LOADERS ★ CLAMSHELL BUCKETS



HERE'S WHY PLANT ENGINEERS ARE STRONG FOR TRI-CLAD MOTORS

REG. U.S. PAT. OFF.

The ball bearings of this 10-hp Tri-Clad motor are fully enclosed in cast-iron housings that give protection against the dust and dirt often found where conveyors are installed.

The contours of the end shields and the location of the ventilation openings protect the windings of Tri-Clad motors from the grease that fairly drips from drives of this kind.

Applications like this are often orphans, as far as regular maintenance is concerned. The extra lubricant and bearing capacity of Tri-Clad motors helps offset accidental neglect.

This 2-hp, 41.4-to-1 ratio, splashproof Tri-Clad gear-motor has a hard, uphill job every minute it is in operation. Sturdy construction and efficient ventilation are vital factors here.

The rigid, one-piece, cast-iron frame and feet of the Tri-Clad motor are made to withstand constant vibration, like that of these Tri-Clad powered concentrating-table drives.

The Tri-Clad motor was designed for rough, tough jobs such as are found in quarries and rock-products plants. The extra protection of its frame, the toughness of its Formex windings, and the improved design of its bearings make it the motor for top-notch performance on jobs like these five.

Next time you install motor-driven equipment or buy replacement motors, make sure you get the extra protection of Tri-Clad. Now available up to 100 hp in standard, open construction. Ask your G-E representative about other types and sizes. *General Electric Company, Schenectady, N. Y.*

BUILT FOR PROTECTION FIRST . . . . TO LAST

General Electric and its employees are proud of the Navy award of Excellence made to its Erie Works for the manufacture of naval ordnance.

GENERAL ELECTRIC

700-110-0858

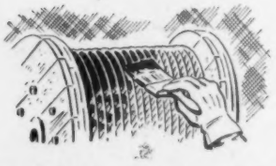
"We build the stamina in... proper lubrication will keep it there!"

"Yes sir, Roebling 'Blue Center' Steel Wire Rope leaves our shops ready to give you the longest, lowest-cost rope service you can buy at any price. But, neglect it in service—give it the absent treatment as far as lubrication is concerned—and you are literally throwing good rope steel and a portion of your rope service out the window.

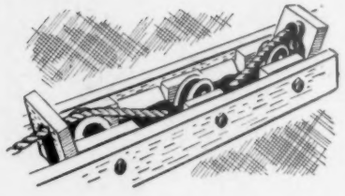
Pound for pound, wire rope probably has more bearing surface (inside the rope) than any other piece of machinery. Think of wire rope as a precision machine and you'll give it the same care as any fine equipment. All right, you say, what's the best type of lubricant to use—what's the best way to apply it?

As a starter, the best lubricant is one made specially for lubricating wire rope (never discarded crankcase oil!)... free from acids and corrosive elements . . . generally heavy-bodied, straight mineral lubricants of good penetrating and adhesive qualities. In addition, make sure it does not cake, gum or ball-up if contaminated with an excess of dust, dirt or metallic particles. And it must *not* thin down under high temperatures. If you're in doubt about what you're using, Roebling Engineers will give you recommendations as to the proper type.

Now, there have been lots of arguments about the best way to lubricate . . . principally because wire rope operates under such widely varying conditions. But here are some basic facts.



Some prefer to apply it with a brush. It's the simplest way—not always adequate but certainly better than none at all. If you brush, do it slowly, carefully, frequently . . . for it's the most difficult method to get complete coverage and penetration.



A better way is this simple three-sheave trough. It should be firmly fixed near the reel or drum, the lubricant applied hot and the rope run through not faster than 30 feet a minute. And, there are as many other good lubricating devices as human ingenuity can devise—to meet specific operating conditions.

One more pointer . . . be sure that your wire ropes are well lubricated when not in service—for when ropes are idle is when they are most susceptible to rust destruction. And, finally, set up a periodic lubrication and inspection schedule . . . so that you get maximum useful rope life . . . so that you get the extra service that has been built into every inch of wire rope that bears the Roebling Trademark . . ."

JAR ROEBLING

Extra rope service from Roebling Research and Engineering, from the knowledge of men in the Roebling mills, of Roebling men in the field . . . they all add up to "Blue Center"—the Roebling wire rope that offers you lowest average operating cost per ton of material handled.

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JOHN A. ROEBLING'S SONS COMPANY
TRENTON, NEW JERSEY
Branches and Warehouses in Principal Cities

ROEBLING
"Blue Center"
STEEL WIRE ROPE
PREFORMED OR NON-PREFORMED

Some good old traditions are tumbling!

THE manufacturer who needs only a couple of bronze bearings in his product, wouldn't have to consider melting up the park mermaids if his fellow-manufacturer would forego the heavy bronze casting that is still being used simply because grand-dad made it that way when copper was plentiful.

In other words we have all discovered that munitions are made out of metals, rather than priorities . . . and plenty is being done about it. But before criticizing the other fellow it is well to remember that when it comes to wasteful practices most of us in industry live in glass houses.

A homely example of this is found in plain every-day pipe. Too many users of pipe think of standard weight as the starting point on the scale of available thicknesses. If the duty is *too heavy* for standard pipe, they use a heavier weight. But if it is *too light* they still use standard weight even if the requirement could be met by a pipe weighing half as much.

Yes, the fact is that light, but remarkably rugged Taylor Spiral Pipe can handle a large percentage of the jobs that are ordinarily handled by standard weight pipe. Switching to Taylor Spiral for such requirements means a big saving in dollars and steel. Saving dollars is important at any time. But far more important at this time is the *saving of vital material.*

Taylor Spiral Pipe can correct a particularly wasteful practice. It conserves steel and dollars in services like those listed—meets such requirements fully. Thicknesses range from 18 to 6 gauge; sizes from 4" to 42"; joint lengths up to 40 ft. All types of end joints and couplings, all kinds of fittings and specials or fabricated assemblies, are produced by Taylor Forge, assuring a complete service and undivided responsibility. All details are explained in Catalog 404.

USE TAYLOR SPIRAL PIPE FOR:

- High and Low Pressure Water Lines.
- Low Pressure Steam and Air Lines.
- Steam and Diesel Exhaust Lines.
- Vacuum and Suction Lines.
- Blower Piping.
- Sand and Gravel Lines.
- Industrial Gas Lines.
- Oil and Gas Gathering Lines.
- Swing Pipe.
- Spray Pond Piping.
- Hydraulic Mining.
- Dredge Lines.

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USED THE WORLD OVER
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to the
MINUS HALF INCH SIZES

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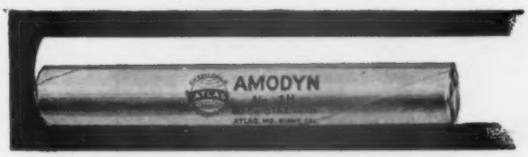
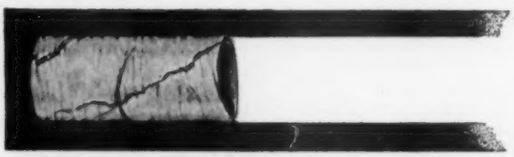
New Help for FASTER LOADING!

Atlas "REDI-SLIT" Cartridges



An Atlas "REDI-SLIT" cartridge as it comes from the case.



The same "REDI-SLIT" cartridge after loading and tamping.

WHERE "Better Blasting" demands maximum loading density, Atlas "REDI-SLIT" cartridges become a real aid toward faster, more efficient loading. "REDI-SLIT" cartridges do away with the need for tedious hand-slitting necessary to compact the charges by tamping in rock that's hard to shoot, or in upward-pitching holes.

Just load, tamp—and Atlas "REDI-SLIT" cartridges stay put—expanded so they pack neatly and firmly in the back of the bore hole!

Because all "REDI-SLIT" cartridges are slit in exactly the same way, they give uniform results. They will save loading time, and improve the efficiency of your blasting. Ask the Atlas Representative to demonstrate how "REDI-SLIT" cartridges can help in your operations.

Atlas "REDI-SLIT" Cartridges

- . . . expand easily to fill the bore hole.
- . . . prevent spilling of powder during handling and loading.
- . . . maintain the moisture protection of the wrapper.
- . . . make modern, economical explosives practical in upward-pitching bore holes.
- . . . save money and speed production.

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It's a **DOUBLE WHIZZER** *for Fine Sizing*

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MECHANICAL AIR SEPARATOR

This is the modern unit you need in closed circuit grinding operations to get greater production and precision in classifying powdered materials.

The *double whizzer* . . . an exclusive Raymond development . . . insures more positive rejection of the oversize, and permits only the selected fines to pass into the finish bin. The result is better product control and greater uniformity in particle size.

The *double whizzer* gives wide range fineness control. You can obtain any degree of classification on cement, for example, from the standard grades to the high early strength cements simply by adjusting the vertical slide plates . . . no internal adjustment required.

At extreme fineness, you can get record high capacities with the *double whizzer* Separator in classifying such materials as hydrated lime, gypsum, clay, graphite, raw mix, clinker, slate dust, chemicals and many other non-metallic minerals.

Ask for Raymond Separator Catalog No. 45

for High **EFFICIENCY**
for High **CAPACITY**
for High **FINENESS**

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PIT AND QUARRY

Vol. 34 JUNE, 1942 No. 12

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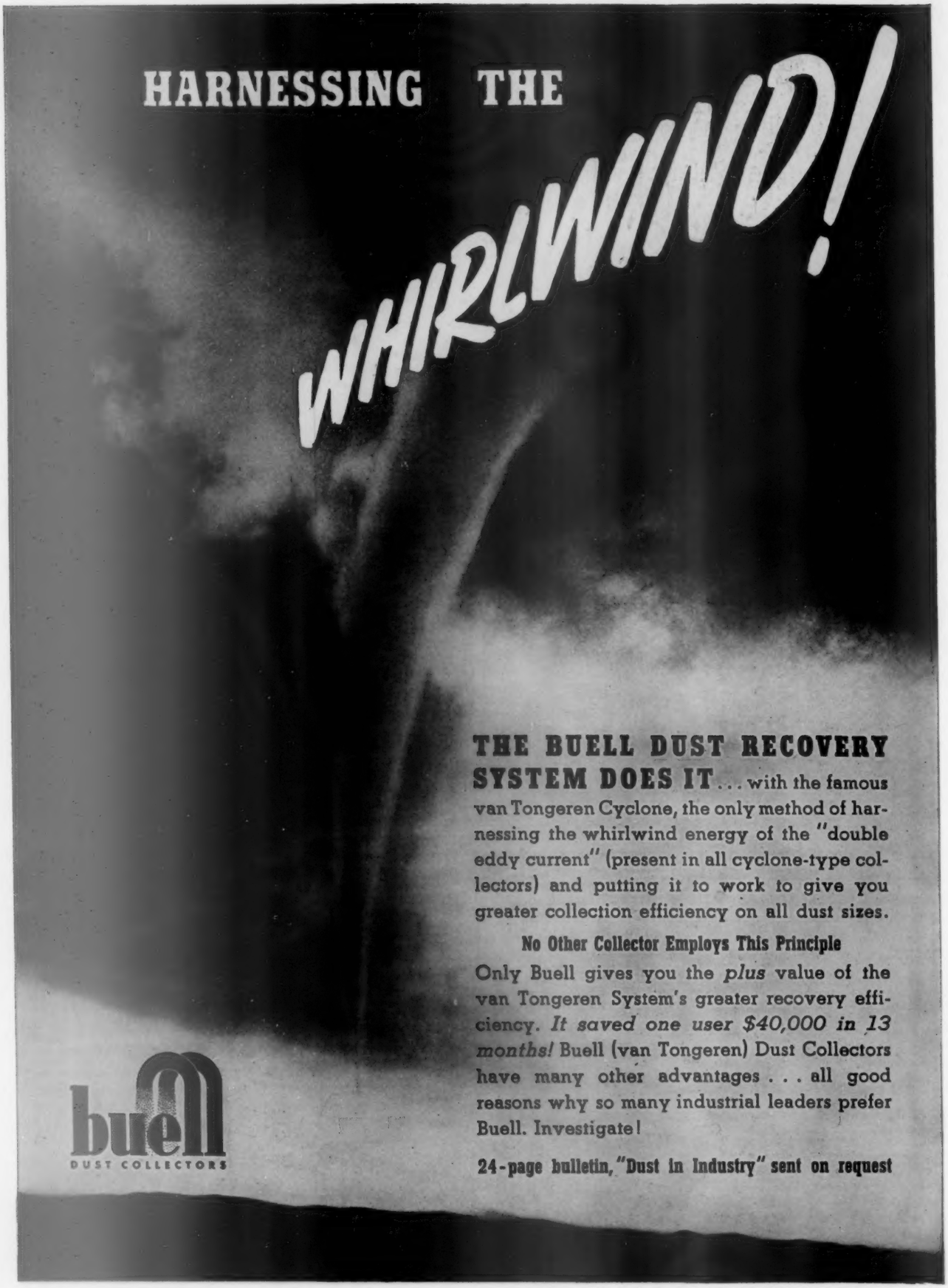

THE BUELL DUST RECOVERY SYSTEM DOES IT . . . with the famous van Tongeren Cyclone, the only method of harnessing the whirlwind energy of the "double eddy current" (present in all cyclone-type collectors) and putting it to work to give you greater collection efficiency on all dust sizes.

No Other Collector Employs This Principle

Only Buell gives you the *plus* value of the van Tongeren System's greater recovery efficiency. *It saved one user $40,000 in 13 months!* Buell (van Tongeren) Dust Collectors have many other advantages . . . all good reasons why so many industrial leaders prefer Buell. Investigate!

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PIT AND QUARRY

CHICAGO JUNE, 1942

Limestone Producers Fight Prison-Labor Plan in Maryland

Use of prison labor by the state of Maryland to produce pulverized limestone in competition with private industry was labelled "socialistic" by former state senator Harry W. LeGore at a recent hearing in Baltimore before the Maryland Board of Correction.

Speaking for a group of about 25 private producers of lime and limestone against the Farm Bureau-backed proposal to use prison labor in state-operated quarries, Mr. LeGore said the program "could quite easily develop from the point at hand to competition of large proportions between individual producers and organizations using prison labor."

Representing the LeGore Lime Company, Mr. LeGore joined with officials of other Frederick County lime manufacturers in opposing the use of prison labor in competition with private enterprise. The M. J. Grove Lime Company, S. W. Barrick & Sons and Shank & Etzler also were represented at the hearing which was adjourned by Chairman Willis R. Jones without a decision.

Resume Test Drillings for Arkansas Bauxite

Test drillings for deposits of bauxite, the chief ore of aluminum, are being resumed in two Arkansas counties by the Bureau of Mines.

An area of about 250 square miles in Saline and Pulaski Counties between Little Rock and Benton is the site of the exploratory work, which is being carried on to determine the location, size and nature of hitherto unknown bauxite deposits, and the quality of the ore.

Permission to seek deposits of bauxite—highly important in the accelerated wartime aluminum production campaign—has been obtained through signed agreements with property owners of that section which grant the government the right to drill or otherwise prospect on privately-owned land at no cost to the owners, Dr. Sayers stated.

Seminole's Miami Plant Again in Production

After a winter shutdown the Seminole Rock & Sand Company, Miami, has resumed operations and is filling several large orders for commercial rock and for railway ballast for the Seaboard Air Line Railway Company.

While shut down several minor plant changes were made.

Lone Star's Shipments Rise, Profits Decline

Although sales of the Lone Star Cement Corporation for the first quarter of this year were considerably higher than for the first three months of 1941, net profit declined from $854,996 in 1941 to $708,368 in the 1942 quarter.

Provision for taxes this year were more than double those paid last year, largely accounting for the shrinking profit margin.

Coming Events

June 4-5, 1942—Chicago. Annual convention, National Industrial Sand Association, Palmer House.

June 9-11, 1942—Cleveland. Annual convention, National Concrete Burial Vault Association, Hotel Cleveland.

June 22-26, 1942—Atlantic City. Annual convention, American Society for Testing Materials.

Lehigh Company Held Blameless in Blast Which Took 31 Lives

Since the publication of the original news story in the May issue of PIT AND QUARRY, additional information as to the probable cause of the fatal explosion at the quarry of the Lehigh Portland Cement Company's plant at Sandt's Eddy, Pennsylvania late in March has been brought to light through the release of the report of an investigation made by Lewis G. Hines, secretary of Labor and Industry for the state. It clears the Lehigh company of all suspicion of blame.

"My investigation shows that the Lehigh Portland Cement Company had complied with all of our state regulations for charging shots of this kind and had in every way complied with our safety laws and safety regulations," Mr. Hines said.

Joseph S. Young, president, also points out that there were no men on the floor of the quarry when the blast took place. Those who had assisted in unloading the dynamite before the blast had gone to another quarry about a half mile away.

Asphalt Plant to Rise on Consolidated Site

Property owned by the Consolidated Rock Products Company in Van Nuys, California, has been selected by the city of Los Angeles as a site for a proposed municipal asphalt plant, it was revealed when the city started condemnation proceedings for the property in Los Angeles Superior Court recently.

The Consolidated Rock Products Company is now in process of reorganization in United States District Court, it was further disclosed. The bondholders' protective committee, consisting of W. D. Courtright, Fred L. Dreher, F. J. Gay, Alfred Ginoux, and Guy Witwer are included as defendants.

Building Volume Up Despite War Ban on Nonessential Work

War construction contracts continued in large volume during the month of April, according to F. W. Dodge Corporation. The dollar total of building and engineering contracts awarded last month in the 37 eastern states amounted to $498,742,000. This was a 23 per cent. increase over April, 1941. While the April total was 18 per cent. under the March figure, the drop is not considered to signify a trend, since April was the period of drastic curtailment of civilian construction, and at the same time a period of planning for large war construction projects to be started hereafter, although the recent decision to abandon some of these may prove otherwise.

The April figures brought the contract total for the first four months of this year up to $1,859,944,000, compared with $1,462,156,000 in the first four months of 1941, an increase of 27 per cent. Non-residential building contracts increased 37 per cent.; residential building contracts increased 20 per cent.; and public works and utilities contracts increased 22 per cent. Included in the residential classification were 140,394 family dwelling units in new residential buildings, at a total contract cost of $528,242,000. The number of units increased 29 per cent. over the first four months of 1941, while the dollar volume increased 7 per cent.; this reflects a decrease in average unit costs, due to the elimination of nearly all types of new housing outside the war housing classification.

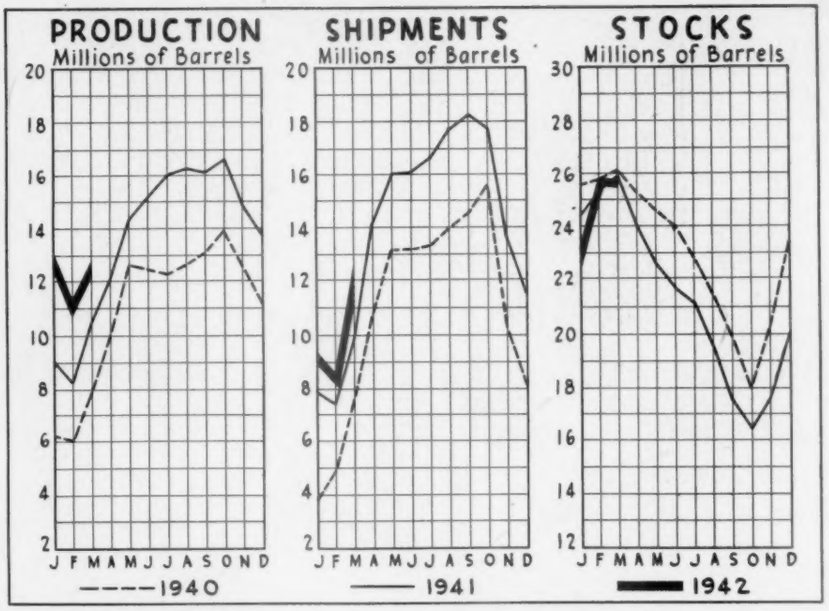
In addition to the large construction volume in the 37 eastern states, there has been a proportionate amount in the 11 western states, and a considerable, though unannounced, volume of work at various overseas sites.

Paid Circulation of Pit & Quarry Among Nonmetallic - Mineral Producers in Recent Years:

1941	(November)	6,179
	(May)	5,945
1940	(November)	5,397
	(May)	5,037
1939	(November)	4,641
	(May)	4,617
1938	(November)	4,496
	(May)	4,366
1937	(November)	3,971
	(May)	3,772
1936	(November)	3,654

CONTINUOUSLY FOR 25 YEARS THE LARGEST PRODUCER CIRCULATION IN THE FIELD

69% increase in 5 Years



The Portland-cement industry in March, 1942, produced 12,733,000 barrels, shipped 12,563,000 barrels from the mills, and had in stock at the end of the month 25,838,000 barrels of cement, according to the Bureau of Mines. Production and shipments in March, 1942, showed increases of 20.2 and 26.7 per cent. respectively, as compared with March, 1941. Portland-cement stocks at mills were 0.6 per cent. lower than a year ago.

Remove Restrictions on Phosphate Rock

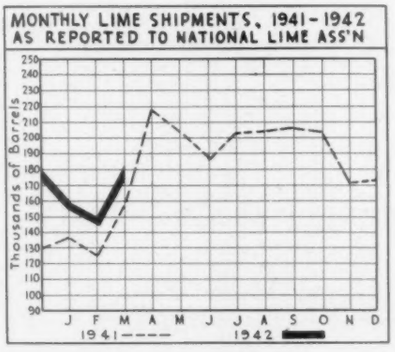
Inventory restrictions on phosphate rock were removed on May 11 by the Director of Industry Operations to allow consumers to take advantage of transportation facilities when and as they are available.

Order M-149, issued on that day, removes the minimum working inventory restrictions of Priorities Regulation No. 1 and any other inventory restrictions, insofar as they apply to phosphate rock.

Propose Revision of Screen-Wire Sizes

A standing committee, representing the producers of aggregate and the manufacturers of screens, and screening machinery, has proposed a revision of Simplified Practice Recommendation R147-33, Wire Diameters for Mineral Aggregate Production Screens, according to an announcement of the Division of Simplified Practice of the National Bureau of Standards.

This recommendation lists the wire sizes recommended for the construction of mineral aggregate production screens of various sizes of clear square opening. The original recommendation, drafted by a general conference of all interests in 1932, reduced the variety of wire diameters for openings ranging from ⅛ to 3 inches by approximately 75 per cent of their former number. The recommendation was reaffirmed in 1936, and again in 1940. As a result of the recent review of the recommendation, it is proposed to add to the schedule wire diameters for screens with clear square openings of 3½ and 4 inches. This proposal would add only one new wire diameter, i.e., one inch, to those already listed.



According to data collected by the National Lime Association, 71 companies in March, 1942, shipped 182,216 tons of lime (116,772 quicklime; 65,444 hydrate). Reporting companies represent 47.4 per cent. of the association's total capacity of record. Based on PIT AND QUARRY'S estimates for the remainder of the industry, the total shipments for the month by all plants were approximately 465,000 tons. Shipments of lime by users for March, 1942, were:

Use	Quicklime (tons)	Hydrate (tons)
Agricultural	2,552	16,485
Building	13,445	27,266
Chemical	100,775	21,693
Total	116,772	65,444

CEMENT COMPANY EARNINGS

Yosemite Portland Cement Corp.

Record cement deliveries last year resulted in net profit of $124,992, against $4,608 for 1940. Net profit for 1941 is equal to 46 cents a share on 257,092 shares of 4-per cent. non-cumulative participating preferred and $1.89 a share on 3,521.5 shares of class A common stock. Arrearage on class A stock at year-end was $7.61 a share. Net for 1940 was equal to slightly more than 1¾ cents a preferred share. Dividends for 1941 were 40 cents a share on the preferred, against 20 cents in 1940. Current assets were $1,156,-277 and current liabilities $177,053 at end of 1941, against $980,184 and $76,753, respectively, a year earlier.

Calaveras Cement Company

Larger shipments and improved selling prices in 1941 resulted in net profit of $204,248, equal to $11.55 a share on 17,681 shares of $7 preferred which was in arrears on dividends at year-end. After a $50,000 appropriation to reserve for war contingencies, $154,248 or $8.72 a share was carried to earned surplus. For 1940, net profit was $54,933 or $3.06 a share on 17,999 preferred shares. Current assets at end of 1941 were $936,003, against $694,628 a year earlier, and current liabilities $362,844, against $189,073. Dividends totaling $3.25 a share were paid on preferred last year, against none in 1940.

Pacific Portland Cement Co.

Net sales of Pacific Portland Cement Company in 1941 were the largest in the history of the company, while net income after all charges was the highest for any year since 1929.

Net sales totaled $5,412,841, compared with $3,703,030 in 1940. Net income totaled $511,250, after Federal income taxes amounting to $251,655. This compares with $189,-572, after taxes of $50,770, for the preceding year.

The profit is equivalent to $9.24 a share on 55,308 shares of 6½ per cent cumulative preferred stock outstanding, in arears $43,75 at the end of 1941. This compares with $3.34 a preferred share in 1940.

During the year $5 a share was paid on the preferred stock, against $4 a share paid in 1940.

A total of $557,392 was expended in capital improvements in the year.

The company's balance sheet as of December 31 shows total current assets of $2,356,614, against $1,921,-456 a year before, and total current liabilities of $655,083, against $377,-535 a year before.

Pennsylvania-Dixie Cement Corp.

This corporation and subsidiaries for the 12 months ended March 31, 1942, report net profit of $1,053,495 after federal income and excess profits taxes and $420,000 reserve for contingencies or $8.69 a share on $7 preferred in arrears. For the 12 months ended March 31, 1941, profit was $1,284,381 before federal income taxes.

Monolith Portland Cement Co.

Net profit in 1941 was $235,022, equal to $1.64 on 8-per cent. cumulative preferred stock, compared with loss of $10,373 in 1940. Paid 25 cents dividend on preferred in 1941 leaving accruals of approximately $3.01 a share as of December 31. Current assets at December 31, 1941, including $360,148 in cash, were $1,243,428 and current liabilities were $478,581, indicating working capital of $764,847.

Riverside Cement Company

Net profit for 1941 was $757,312, equal to $2.43 a share on the class A stock against 1940 net profit of $430,481 or 99 cents on class A. Dividends on first preferred stock in 1941 were $164,556. A dividend of 25 cents a share on class A stock was paid in December, 1941, leaving an arrearage against this stock of $9.97½ as of December 31. Current assets on December 31, 1941, were $2,045,588 and current liabilities $876,607, indicating net working capital of $1,168,981.

Babson Offers Idea to Make Tires Last

Roger W. Babson, well-known economist who has been vacationing at Lake Wales, Florida, is experimenting with the retreading of tires by driving them through liquid asphalt and then through finely crushed stone, according to the *Lake Wales News*.

It is Babson's belief that the coating of asphalt and gravel will protect the rubber for a good many miles. Each town, according to his plan, would provide a flat area when drivers could drive and coat their tires with the asphalt, then drive through loose gravel.

A good idea—if it works!

New Bureau Formed to Administer All Building Controls

Organization of a Construction Bureau consolidating the construction functions of the War Production Board was announced May 12.

William V. Kahler, on leave as chief engineer of the Chicago area, Illinois Bell Telephone Company, and since May, 1941 head of the Construction Branch, Production Division of the WPB, will be chief of the new Bureau.

As part of the Production Division, the Bureau will:

1. Service all construction essential to the war effort.
2. Recommend construction-project priority ratings.
3. Apply the principles of conservation of essential materials to construction projects.
4. Administer Conservation Order L-41 which places all private construction under rigid control.

The consolidation makes it possible for all applications for construction, except those of the Army and Navy, to be handled by a single WPB agency. It will allow a central integration of requirements for construction material, information of which is basic to planning building programs. It also will make it possible to study from one point of view the essentiality of any building project.

In general, the bureau will service essential construction projects so that scheduled completion dates are met. It will work closely with industry and with the Army, Navy and other government agencies to eliminate construction delays wherever possible.

The bureau will recommend the issuance of limitation and conservation orders to conserve construction materials, equipment and labor required for the war program, and administer such orders. The policies of the Bureau of Industrial Conservation will be applied by the Construction Bureau to project application to insure a minimum use of essential materials.

Large Oil Burner for Pacific Cement Plant

A large oil burner, with a capacity of 750 to 800 gallons of burner oil per hour, is being manufactured by the Pan - American Engineering Company of Berkeley, California for installation in one of the plants of the Pacific Portland Cement Company.

Varady Erects Slag Plant at Inland's Indiana Harbor Mill

For more than a quarter of a century, the name of Varady has been well known in trucking circles in the great industrial district around the southern end of Lake Michigan. Since World War I, fleets of Varady trucks have hauled the products of northern Indiana cement plants, steel mills and oil refineries. The company prospered because it kept its word, maintained good equipment and delivered on schedule. In recent years the firm added earth-moving to its activities and worked on a number of large filling and excavating projects.

The Varadys are now engaged in erecting a slag-crushing plant at the Inland Steel Company's Indiana Harbor mill which will have a capacity of 300 tons an hour. It will be completed and ready for operation this summer.

The Varady Company has among its present equipment a score of trucks, a Lorain shovel, Osgood

A Varady tractor and bull-dozer in action.

crane, a Caterpillar tractor with La-Plante-Choate bulldozer and a Baker bulldozer mounted on an Allis-Chalmers tractor which will come in handy at the new plant.

The storage bins at the new plant will be 32 feet in height and will be served by a 200-foot belt-conveyor which will carry the slag to the vibrating screens above. Oversize will be returned for crushing. Only about 10 per cent. of the slag requires crushing.

The new company will be known as the Indiana Slag & Ballast Company.

Roquemore, Pioneer in Industry, Passes Away

John D. Roquemore, president and owner of the Roquemore Gravel & Slag Company, Montgomery, Alabama, died May 19. Members of the PIT AND QUARRY editorial staff mourn a good friend and one of the leading figures in the aggregates-producing industry in the South. He was a pioneer in large-scale production of sand and gravel and his operations were many times described in these pages in the past 15 years.

Mr. Roquemore always kept active control of all departments of his business and was quick to seize opportunities opened up by changing conditions. Within the past few years he had built a new sand-and-gravel plant, a commercial ready-mixed-concrete plant, and an aggregates-bituminizing plant, all of modern design and construction. When the defense-construction program began he devoted much of his time and effort to the production of ready-mixed concrete for army camps and other projects in various parts of the South.

Raleigh Firm Re-Opens Quarry at Neverson

The Southern Aggregates Corporation, Raleigh, North Carolina, has re-opened its quarry and crushing plant at Neverson, North Carolina after a 1½-year shutdown.

At Greystone, North Carolina a new asphalt plant has been erected and a stock-piling and tunnel-reclaiming conveyor system has been installed to feed granite screenings to this plant. Recently the production of rip-rap was also begun at this plant.

General and Acme to Supply Stone for Dam

The General Crushed Stone Company, holder of a contract to supply the aggregates for the building of the Blue Stone Reservoir Dam near Hinton, West Virginia, is setting up a plant on the property of the Acme Limestone Company at Snowflake, West Virginia, to produce 4,000 tons daily.

The new plant will supplement production at the established Acme plant, both of which will supply material under General's contract.

Ordnance-Plant Cement Awarded to Medusa

The largest single order for cement ever to be placed with the Dixon, Illinois, plant of the Medusa Portland Cement Company, approximately 100,000 barrels, will be used in the construction of the Green River Ordnance Plant.

The cement will be shipped in carload lots to the site of the defense plant, which is located south of Dixon.

Davis, Permanente Operating Chief, Taken by Death

The editorial staff of PIT AND QUARRY and the sand-and-gravel, cement, construction and other industries lost a personal friend and an important member in the death on March 24 of Harry P. Davis. Although only 43 years of age Mr. Davis had already been responsible for much important work and was a leading figure in many other activities of the Henry J. Kaiser organizations.

Mr. Davis was born at Gold Hill, Nevada and received his education at the University of Nevada at Reno. He was first employed by the Kaiser Paving Company as timekeeper and cost accountant at sand-and-gravel operations near Livermore, California. He later worked as construction superintendent on various projects and, as salesman for wholesale sand-and-gravel, supervised the construction of a great many ready-mixed-concrete distributing plants in the San Francisco Bay area. From 1935 to 1937 he was assistant general superintendent for the Columbia Construction Company on the Bonneville Dam project and from 1937 to 1939 held the same position on the Grand Coulee Dam. At the latter project he constructed and operated the aggregate and concrete plants which involved the use of unusually long belt-conveyors. From 1939 to 1941 he was general superintendent in charge of construction and operation of the Permanente cement plant and also for the large aggregate plant and 10-mile conveyor belt line to Shasta Dam. From 1941 to 1942 he was also in charge of the construction and operation of the Permanente Metals Corporation magnesium plant. In this connection he was instrumental in proving the production of magnesium by the Hansgirg carbothermic process, a revolutionary new method of producing magnesium by direct reduction.

Ralph E. Knight has been made engineering and construction manager and D. A. Rhoades, operations manager, of the Permanante project, succeeding the late Harry P. Davis. H. V. Lindbergh is the new administrative manager. The project includes the Permanente Corporation cement plant and the Permanente Metals Corporation magnesium plant near San Jose, California. Mr. Knight was formerly assistant to Mr. Davis and Messrs. Rhoades and Lindbergh were formerly with the Henry J. Kaiser Company.

WPB to Allow Some Road Work Without Authorizing Order

The War Production Board is allowing governmental road departments to begin construction of many public roads without individual authorization of each project under provisions of Conservation Order L-41, which places construction of all kinds under rigid control.

Authority No. L-41-600, issued May 12 by J. S. Knowlson, Director of Industry Operations, makes it possible for federal, state, county and municipal agencies to continue their spring and summer programs for building essential public roads by simply filing monthly reports of material commitments.

Neither Order L-41, nor the Authority issued under it today, restricts road construction for which P-19-e Preference rating orders are issued. Although projects that require preference rating orders for obtaining material come under the provisions of L-41, upon issuance of a P-19-e series order, they are automatically authorized to begin construction. For such projects the road departments should make application as in the past for a P-19-e Limited Highway Project Preference Rating Order.

Arrangements are being made for monthly reports of road departments to be gathered and coordinated by state highway departments and forwarded to the Public Roads Administration of the Federal Works Agency. Data on the reports will keep the Public Roads Administration and the War Production Board informed as to the scope of the program and the demand for materials. For this purpose the WPB has adopted Form PR-46 of the Public Roads Administration which has been in use for two and a half years in connection with Federal Aid Roads.

Only materials which are ordinarily available locally such as sand, gravel, crushed stone, etc. may be used, since it is provided that no important types of steel, except from stocks already in the hands of road departments or contractors, may be incorporated in the projects.

Security Program for Quarries and Mines

An emergency protection program designed to make secure the continued production of vital war materials from the Nation's mines, quarries, mills, smelters and allied mineral production facilities is being undertaken by the Bureau of Mines, it was announced recently by Secretary of the Interior Harold L. Ickes.

Integrating its activities with other governmental agencies under the Facility Security Program of the Office of Civilian Defense, the Bureau of Mines will coöperate with the Army and Navy, the Federal Bureau of Investigations and other Federal agencies in a nationwide unified effort to secure vital supply, production, storage, transportation and communication facilities of all types and industries from hazardous negligence and subversive enemy action, Secretary Ickes stated.

Tentative plans call for the immediate setting up of a specially-trained field force in all the mining and mineral-producing areas of continental United States and Alaska in order to achieve and maintain the fullest measures of security to mineral production. Funds to carry out the program have been appropriated by the Congress in the Sixth Supplemental Appropriation Bill signed by the President April 29, 1942.

"Emphasis will be placed upon the primary responsibility of owner-management," Dr. R. R. Sayers, director of the Bureau, stated, "and in all cases where possible, the services of local enforcement officials will be utilized." Where additional protection must be provided in whole or in part by any other agency, the property will be certified to the appropriate authority, Dr. Sayers added.

The Metal and Nonmetallic Mineral Mining Section will establish a security program for the approximately 7,000 important producing metal mines employing over 100,000 persons, the 2,000 large quarries, and the numerous smelting and other metallurgical plants adjacent to or closely allied with mines and quarries.

Roofing-Granules Plant Rebuilt Following Fire

The Staso Milling Company has completed the rebuilding of the main mill building at its Whiteford, Maryland, roofing-granules plant. This department was destroyed by fire early in January at a loss of $110,000. The cause was supposed to have been an overheated bearing. Rebuilding was begun at once by the Austin Company, builders.

The plant has an annual capacity of 100,000 tons of natural blue-black granules.

New Construction in 1942 to Top 1941 by $500,000,000

The Department of Commerce has estimated that the total value of new construction this year may reach $12,000,000,000 or nearly $500,000,000 more than last year.

In spite of the War Production Board's conservation order L-41, which prohibits the start of unauthorized projects after April 9, the department forecast that the bulk of the current volume of construction is essential to the prosecution of the war and is more likely to increase than decrease. The WPB's order, the department said, however, will result in a substantial curtailment of some types of private construction.

Total new construction in the first quarter of this year was $2,600,000,000. The decline of 16 per cent. from the last quarter of 1941 is accounted for by the severe drop in private construction, curtailment in the public non-war program and by winter weather conditions.

Nearly one-quarter of the total construction in the first three months of this year was on direct military projects.

Frank Welch Dies at Home in Greenville

Frank M. Welch

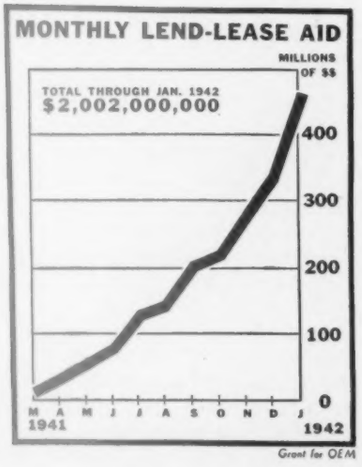
It is with deep regret that PIT AND QUARRY announces the death on May 19 at Greenville, Ohio of Frank M. Welch, a personal friend of members of the staff and an important figure for many years in the sand-and-gravel industry. Death, attributed to cerebral thrombosis, claimed him after a lingering illness at the age of 60 years. Surviving are his wife and two sons, one of whom is now serving his country.

Mr. Welch in 1918 founded the F. M. Welch Engineering Service, an affiliate of the American Aggregates Corporation, and in the intervening years designed and built sand-and-gravel plants in all parts of the country. He also guided the affairs of the Greenville Manufacturing Company which manufactures equipment for this industry. No convention of the industry was complete without him. Through these connections gained a wide acquaintance and played an important part in the development of the industry.

CURRENT BUSINESS INDICATORS

A drastic switch in war-production policy is now pending. Instead of continuing to expend much of our effort and a substantial share of our limited supplies of essential raw materials in the construction of new production facilities, it now appears that further expansion of facilities will be halted and the emphasis in the future will be on getting the maximum production of guns, ships, tanks, planes and ammunitions from existing plants.

Some observers are inclined to think that this sudden change in policy means that the end of the war is in sight—possibly some time next year. Others less optimistic say that the about face can be attributed to the fact that our supplies of many vital war materials are simply insufficient to keep all of the new plants operating at capacity after they have been completed, and we have had to trim our sails accordingly. Regardless of the actual reasons, it is evident that the pending decision to halt the expansion program will modify drastically the prospects for industries associated with construction. A month ago it appeared reasonably certain that the volume of building activity during the current year would reach the highest level on record, despite the severe restrictions that were placed on private construction. At present, however, the prospect for the construction industry after the next few months is clouded with uncertainty. Although it is probable that the new plants that are actually under construction will be completed, few new contracts will be let for plant construction. Moreover, it seems highly probable that a substantial number of the contracts that have already been signed will be cancelled.



Grant for OEM

Equally significant to virtually all branches of industry was President Roosevelt's anti-inflation program. The 7-point program recommended to Congress includes: (1) heavy taxes upon profits and personal incomes, including an income of $25,000 after taxes, (2) a general price ceiling upon commodities and services, (3) stabilization of wage rates, (4) stabilization of farm prices at parity levels, (5) increased war bond purchases, (6) rationing essential commodities which are scarce, and (7) discouragement of credit and installment buying.

Closely following the President's recommendations, the second point of the program was immediately put into effect by Price Administrator Henderson. In a single sweeping order—the General Maximum Price Regulation—ceilings were set on prices of nearly all goods and services. The principal provisions of the order are as follows:

(1) Beginning May 18, retail prices with a few exceptions, must not exceed the highest levels which each individual seller charged during March 1942.

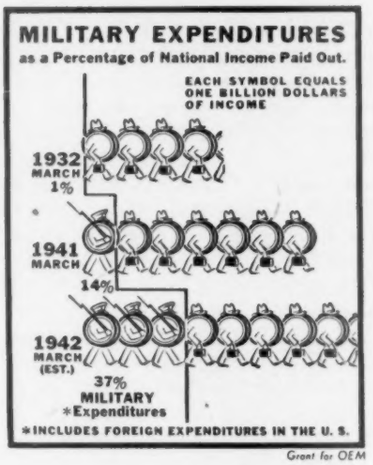
(2) Beginning May 11, manufacturer and wholesale prices and the prices for wholesale and industrial services must not exceed the highest March levels for each seller.

(3) Beginning July 1, no one may charge more for services sold at retail in connection with a commodity than he charged during March.

(4) Effective immediately all retailers, wholesalers, manufacturers, and sellers of services must preserve existing records of sales made during March in order to apply the maximum prices permitted when the ceiling goes into effect.

A number of important commodities are exempt from the regulation. Among them are many farm products, newspapers and books, used automobiles and securities. Services to which the regulation does not apply are labor, personal services, professional services, restaurants, entertainment and public utilities.

Meanwhile, industrial activity in the aggregate has held fairly steady. Further substantial gains have been made in the output of armaments, but these advances have been largely offset by sharp declines in the production of non-war goods. As a result of these contradictory influences it is probable that the Federal Reserve Board's adjusted index of industrial production for April will remain at approximately 173 per cent.


MILITARY EXPENDITURES
as a Percentage of National Income Paid Out.
EACH SYMBOL EQUALS ONE BILLION DOLLARS OF INCOME
1932 MARCH 1%
1941 MARCH 14%
1942 MARCH (EST.) 37% MILITARY *Expenditures
*INCLUDES FOREIGN EXPENDITURES IN THE U. S.
Grant for OEM

of the 1935-39 average, the same as in the month preceding.

Steel production in April lagged somewhat behind the record-breaking level of March largely because considerable furnace repair work was necessary due to the high rates of operation. Compared with the record output of 7,392,911 tons in March, the American Iron and Steel Institute reports the production of 7,122,313 tons of steel ingots and castings in April. Although this is a decrease of about 4 per cent., the April output was nearly 6 per cent. higher than in the corresponding month of last year. Moreover, the total steel production in the first four months of the current year was 28,161,202 tons, as against 27,030,888 tons in the same period of 1941.

Construction activity also fell off in April. According to the F. W. Dodge Corporation, the aggregate value of construction awards in 37 eastern states during the month amounted to $498,742,000. This represents a decrease of 18 per cent. in comparison with the March volume of $610,799,000.

The continuous expansion of war production is reflected by the rapid advance in war expenditures. In April war expenditures totaled $3,200,000,000. On an average daily basis, this represents a gain of approximately one-fifth over March and an increase of nearly three-fifths over the level prevailing at the beginning of the year. In addition to the Treasury expenditures are the disbursements of the Reconstruction Finance Corporation and its affiliates. With these included the total war expenditures for April total $3,400,000,000.

Asphalt and Tar Products.—In accord with Recommendation No. 45, issued by the Office of the Petroleum Coordinator for National Defense, under date of April 24, 1942, restrictions are placed upon the use of asphalt and tar products on roads, highways and certain other surfacing. Administration of the Recommendation will be handled by the Public Roads Administration.

The following points in connection with the administration of Recommendation No. 45 should be of especial interest.

An applicant for "a certificate of necessity of use of bituminous road material" must be the "authorized representative of the governmental agency having jurisdiction over the roads, streets, or highways on which such use is to be made."

Application must be made on a special form (PRA-B-1, copies of which are available from state highway departments or district or state offices of the Public Roads Administration.

The official applicant must supply "all pertinent information required for a finding by the Public Roads Administration that (1) the road, street, or highway described is necessary to the successful prosecution of the war, including the continuing accommodation of essential civilian traffic, and (2) the proposed use of bituminous road material is essential in the kind and amount described."

These two points are the basis of review and approval or disapproval of applications by all officials authorized to perform this function.

All applications except those of federal agencies must be submitted to the state highway department of the state in which the road or street described is located. This department reviews and recommends approval or disapproval of each application and then forwards it to the district engineer of the Public Roads Administration.

An approved application or a photostatic copy is to be accepted by suppliers of bituminous road material as evidence that such materials may be purchased in the kind and amount designated.

Authorized Construction.—Placards showing that approval has been granted by the War Production Board are being sent to builders of authorized projects to be displayed conspicuously on the premises during construction.

Printed in blue on a white background, the placard carries the initials WPB on which are superimposed the words: "Authorized Construction, War Production Board."

There is space on the placard for a serial number, identifying the individual project, which will be given the project by the War Production Board. The placard may be used only for the particular project for which it is issued.

Automotive Parts.—The War Production Board on May 5 ordered a sharp cut in the present high rate of production of replacement parts for automobiles and light trucks for civilian use.

Only specified functional parts may be produced in the future, and in curtailed quantities designed to satisfy actual demand but eliminate surpluses.

Applying to spare parts for passenger cars, station wagons and taxicabs, and trucks under 9,000 pounds gross weight, WPB's action supersedes, during the period April 1-June 30, the provisions of Amendment No. 1 to Limitation Order L-4-a. This amendment permitted producers to make during the first half of this year up to 150 per cent. of the number of each of the replacement parts sold by them for replacement purposes during the entire calendar year 1941.

Under the new order, Supplementary Limitation Order L-4-c, producers may make during the period April 1-June 30, and during the period June 30-September 30, 70 per cent. of the total dollar volume of replacement parts sold by them in the corresponding quarter of 1941. This production quota is accompanied by certain restrictions on inventory of finished parts.

Effective immediately, producers may manufacture only the following replacement parts: engines, clutches, transmissions, propeller shafts, universal joints, axles, brakes, wheels, hubs, drums, starting apparatus, spring suspensions, shock absorbers, exhaust systems, cooling systems, fuel systems, lubricating systems, electrical systems (including generators, lights and reflectors), gauges, speedometers, rear view mirrors, windshield wipers, windshield wiper motors, control mechanisms, and steering apparatus.

Cloth Bags.—Peddlers and dealers in "unprocessed" second-hand cloth bags are entitled to add a premium of not more than three-fourths of a cent per bag when purchased for resale, Price Administrator Leon Henderson announced in issuing Amendment No. 1 to Maximum Price Regulation No. 55 (Second Hand Bags).

This premium may be added to the maximum prices established for second hand bags which have not been subjected to the necessary reconditioning rendering them fit for immediate reuse as containers. By today's amendment, the OPA recognized the service function of peddlers or small dealers who search out relatively small quantities of used bags in the hands of emptiers and other, accumulate them and then resell to larger dealers, as well as the function performed by dealers in aiding the movement of these "as rise" or "unprocessed" bags from "emptying" to "filling" areas.

The second-hand bag regulation as originally issued made no provision for a premium on resales by such peddlers or dealers, as it had been expected that these interests would be able to buy substantial numbers of bags at prices below the ceilings. It has been shown, however, that emptiers and other persons are generally unwilling to sell their accumulations of bags at prices below the established maximums.

Construction Equipment.—The War Production Board, acting to save substantial amounts of rubber, has assumed rigid control over the production and distribution of all types of rubber-tired construction equipment.

More than 70 items of construction equipment normally equipped with rubber tires are affected by Limitation Order L-82-a. Last year, the construction machinery industry used approximately 8,000 tons of rubber tires and tubes.

At the same time, WPB, in Limitation Order L-82, placed restrictions on the sale and production of power cranes and shovels, which are greatly in demand for military and essential civilian activities. Total requirements this year for these cranes and shovels by military and essential civilian users are estimated to exceed 7,500, whereas the industry's production capacity is only about 5,100 units.

In its order applying to rubber-tired construction equipment, WPB prohibits the future sale, lease, trade, loan, delivery, shipment or transfer of any new equipment without spe-

cific authorization of the Director of Industry Operations, except for orders placed prior to the issuance of L-82-a which carry a preference rating higher than A-2, on which shipments must be made on or before June 1.

Between May 1 and June 1, no rubber-tired construction equipment can be produced except to fill Army, Navy, Maritime Commission and Lend-Lease orders, to fill orders for specified items of equipment needed in the war program for which steel wheels or other substitutes for rubber tires are impractical, or on production schedules specifically approved by the Director of Industry Operations. The specified items are: self-propelled earth-moving graders, carrying and hauling scrapers, and power cranes and power shovels.

The order provides that after June 1, each manufacturer's production schedule regardless of whether or not it is designed to fill war orders or orders for the specified items, must be approved by the Director of Industry Operations. Proposed schedules must be submitted to WPB on form PD-446. This will provide a means of preventing any manufacturer from using critical material to produce equipment that would be useless without rubber tires and of preventing production for non-essential uses.

As defined in the order, construction equipment takes in many items, including drilling machines, crushers, excavators, mixers, batchers, bins, buckets, conveyors, compressors, drag-lines, driers, loaders, screens, and portable washing, screening and crushing plants.

Explosives. — An amendment to Preference Rating Order P-56 issued April 13, 1942, added explosives and explosive equipment to the list of mining machinery and equipment in Schedule A of the Order. This enables mine or quarry operators who have serial numbers under the Order to use an A-1-c rating in obtaining repair parts for such equipment.

To clear up some confusion which has arisen as a result of this amendment, Dr. Wilbur A. Nelson, Administrator of the Mining Branch, explained that the A-1-c rating is applicable for repairs to blasting machines and similar machinery and equipment, but that the rating may not be used for ordinary operating supplies such as black powder and dynamite, to which the A-8 rating remains applicable.

Mines which do not operate under P-56 may use an A-10 rating under the general repair, maintenance and operating supplies order, P-100, to obtain explosives. The amendment to P-56 does not affect any existing priorities on explosives and explosive equipment, nor does it prevent any mine operator from obtaining explosives in the same way as before the amendment was issued.

Fluorspar Prices. — Formal price ceilings for fluorspar at levels generally prevailing on January 2, 1942, were announced in May by Price Administrator Leon Henderson.

The maximum prices—contained in Maximum Price Regulation No. 126 become effective May 11.

An informal price ceiling for fluorspar, coinciding for the most part with the new formal maximums, has been observed since January 20, when all persons known to be producing and milling this chrysalline mineral were requested not to exceed their prices of January 2.

The Price Administrator said that the formal regulation was necessary to prevent price increases and to limit the prices of individuals or companies that had not complied with the informal request.

Fluorspar is important to the war effort by reason of its uses, among others, in the manufacture of synthetic cryolite for making aluminum, and as a flux in the manufacture of stul and ferro-alloys.

Illegally-Acquired Trucks. —Motor-truck dealers have been warned by the Office of Defense Transportation that anyone converting to use any new commercial vehicle covered by General Conservation Order No. M-100 without legal possession of the vehicle as provided by the order is liable to prosecution under the recently-signed War Powers Act.

The warning was issued because of recurrent rumors that new motor trucks are being illegally acquired in violation of the truck-rationing procedure.

Officials point out that any person who willfully violates any provision of Order M-100 may be prosecuted under Section 35A of the Criminal Code, which provides for both prison sentences and fines. In addition, violators may be prohibited from receiving any commercial vehicles or other equipment or materials subject to allocations.

The conservation order, which prohibits the transfer of new commercial vehicles from the inventories of suppliers to users, covers the sale, lease, trade, loan, gift, delivery, shipment, or any physical transfer, of a commercial vehicle which involves the use of the commercial vehicle by a person other than the transferer.

Applications must be filled out if any dealer or other supplier of new commercial vehicles intends to convert them to his own use or the use of anyone else. The applications must then be submitted to the Local Allocation Office of the ODT for action under the procedure established by the ODT and the War Production Board for rationing new commercial motor vehicles.

Fuel Oil. —Because some oil companies have been refusing to deliver fuel oil without preference ratings, the War Production Board issued on May 5 an order cancelling all preference ratings assigned to fuel oil purchases, and providing specifically that sales and deliveries of fuel oil may be made without regard to any preference rating heretofore issued.

The new order (M-144) provides that no preference rating may be assigned to purchases of fuel oil, except for use in ocean-going vessels, without express permission from the Director of Industry Operations exempting the transaction from the provisions of M-144.

The action was taken to prevent companies entitled to the use of a preference rating under a blanket rating order from laying in large stocks of fuel oil while other companies and individuals were unable to obtain necessary supplies.

Financial Reports.—A general financial reporting program designed to provide basic financial data necessary for studies for price-control problems in many industries where adequate information is not now available was instituted last month by Price Administrator Leon Henderson.

Reporting forms and an instruction book requiring balance sheet and income account data are being printed and will be sent May 10 to about 25,000 business corporations, with over $250,000 assets each, engaged in manufacturing, mining, construction, wholesale trade, retail trade and related fields.

The initial annual financial report (Form A) and the first interim or quarterly financial report (Form B) of companies using the calendar year basis must be filed with OPA within 30 days after receipt of the request. If the fiscal year to be covered by the initial annual report is other than the calendar year, the report must be filed within three months of the close of the fiscal year or within 30 days—whichever date is the later. All subsequent annual and interim reports are to be filed within three months and one month, respectively, after the close of the period covered.

None of these reports need be certified by independent public accountants.

OPA initiated the program because of the absence of adequate financial information on large numbers of business enterprises affected by price action. The 1940 corporation income tax returns show there were 69,000 companies, each having assets of $250,000 or more, and that 30,000 of these were in the wholesale trade or retail trade or in manufacturing, construction, mining and agricultural fields. However, OPA pointed out, only about 2,500 of these companies are required to file with the Securities and Exchange Commission and a great number of these are duplicated in the smaller list which contributed to the survey of Industrial Corporation Reports conducted by the FTC.

Time "lags" in filing, the difficulty of assembling, and the technical weaknesses for OPA needs in the material available in other reports—such as the FTC, SEC, income tax, bank, and credit reports—even if they were legally accessible and readily available would hamper OPA's efforts to keep price control actions abreast of current business conditions.

The confidential nature of the reports will be strictly observed, the Administrator said, although the reports will be available on a confidential basis to war planning agencies, such as the War Production Board, when needed, thus providing a centralized regularly recurring source of information for such agencies.

The reports will also make possible the compilation for each industry, or for a group of companies producing a given product, significant overall items such as sales, cost of goods sold, operating profit and net profit before taxes, and to relate these data to inventories, fixed assets, surplus and capital.

Reporting forms were made available on May 10, 1942.

Individual Ratings.—As a further step toward putting American industry under the Production Requirements Plan, Director of Industry Operation Knowlson has announced that WPB will soon discontinue granting preference ratings on individual PD-1A applications for material to be used in general manufacturing or production operations.

All applications for priority assistance which do not specify a required delivery date will hereafter be returned to the applicant. Priorities Regulation No. 1 as Amended requires every applicant for priority assistance to specify in his application the latest date on which the items in connection with which priority assistance is requested can be delivered to him to meet his contract obligations or production schedules. Nevertheless, many applicants, especially those submitting individual applications on PD-1A forms, have been specifying "immediately" or "at once" instead of filling in a definite delivery date. Hereafter, no such applications will be considered until an exact delivery date has been filled in.

Iron and Steel.—Effective May 15, deliveries of iron and steel products will be restricted to preference ratings of A-10 or higher. Since the mine and quarry industries have a blanket rating of A-8 under P-56, and have the further right to apply for higher preference ratings whenever the A-8 is inadequate, the new iron and steel order does not withhold these two critical materials from use whenever justified.

It is important to note that each purchase order for iron and steel must contain a signed statement by a duly authorized purchaser or agent of the purchaser, either stamped or typed on the order, stating that the material is to be used for one of the group classifications set up in the order. These are Army, Navy, Maritime, Defense Projects (war plants), Lend-Lease, Other Export, Railroads, Warehouse, and all others.

This endorsement must appear on our purchase order: "The undersigned certifies to the Producer and the War Production Board that the material ordered herein is to fill orders in group classification 'All Other'."

Power Shortage.—The War Production Board has set up machinery to handle power shortages wherever and whenever they occur.

It issued an Order (L-94) of nationwide application which may affect every user of electric power. In some areas shortages of electric power have already occurred, and in other further shortages are threatened. These shortages are generally caused by the vast increase in use of electric power by war industries, causing many systems to use their reserves in current operations, and reduce their margin in the event of breakdown, drought, fuel shortages, or other unfavorable conditions.

The purpose of the order is to assure a steady flow of power to war industries and essential civilian services by curtailing non-essential uses. Curtailment of electricity for regular consumers, however, will not take place until an area becomes a power shortage area.

Power to Requisition.—The War Production Board has been granted power to requisition machinery believed necessary to the successful prosecution of the war effort.

Through an executive order, the President delegated to the WPB authority which originally had been vested in him by the Second War Powers Act. By applying to the WPB, requisitioning action also may be initiated by the Army, Navy, the Agriculture and Treasury Departments, the Maritime Commission and the Board of Economic Warfare.

Machinery in use had been exempted from the original requisitioning act approved by Congress last October. This new order revokes the exemption and places the requisitioning power in the hands of the proper authority.

Price of Installed Machinery—Manufacturers who sell machinery on an installed basis may calculate prices of installation on the basis of March, 1942 rates for field labor and outbound freight, instead of October 1, 1941, rates, Price Administrator Leon Henderson announced on May 8. The equipment must be priced at October levels; it is only the costs of installation which may be computed on the March basis, it was explained.

Permission to compute costs of installation in this manner is granted in Amendment No. 1 to Maximum Price Regulation No. 136, on machines and parts, effective May 18, 1942.

The readjustment adopts, so far as possible, the policy previously followed in the administration of price-control programs in the machines and parts field.

The amendment also allows resellers of machinery who made price increases during the month of October, 1941 designed merely to offset increases in prices to them effected in September, to retain such increases in prices to the extent necessary to maintain the same percentage of mark-up. As a condition to such increases, detailed reports of the mark-ups must be made to the Office of Price Administration.

The amendment also makes clear the original intention that discounts and other allowances in effect October 1, 1941, can not be reduced or discontinued.

A second amendment to Regulation No. 136, to provide special treatment for government - authorized developmental and experimental contracts, is presently under consideration.

Safety Equipment Restricted.—The War Production Board has imposed stringent regulations on use of scarce materials in the production of safety equipment. The order will conserve a list of scarce materials, which includes aluminum, asbestos cloth, chromium, copper and copper base alloys, nickel, corrosion resisting and alloy steel, tin, synthetic plastics, magnesium, rubber and synthetic rubber and neoprene.

Covered by the definition of "safety equipment" are guards, shields, containers, harnesses, head gears, belts, shoes, protective clothing or coverings, masks, respirator inhalers, resuscitating apparatus, measuring instuments, indicating instruments, protective creams, treads, warning signs and all other such safety articles.

The order prohibits the use of scarce materials in these items except:

a. For A-2 or high-rated orders, if the equipment was manufactured prior to the date of the order, or from parts ready for assembly on the date of the order;

b. For purposes judged essential, such as certain industrial protective clothing and fire-fighting equipment;

c. Within 90 days of the effective date for delivery to the Army, Navy or Maritime Commission.

Substitutions for Critical Materials.—A list of suggested substitutions for critical materials usually used in construction of highways, bridges and culverts, prepared by the Specifications Branch of the Bureau of Industrial Conservation in collaboration with the Public Roads Administration, has been announced by C. L. Warwick, Chief of the Specifications Branch.

The list consists of (1) items of highway, bridge and culvert construction in which critical materials are used, (2) the critical materials involved and (3) suggested substitutions. The list, Mr. Warwick emphasized, is intended as a guide and is not intended to preclude or discourage the use of other substitutes which satisfactorily eliminate critical materials.

The policy of the WPB is to refuse to issue preference ratings for critical materials used in highway construction except those for which non-critical materials cannot be substituted, and in any case only when the project is essential to the war effort or to the health and safety of the civilian population.

The use of concrete instead of iron and steel is urged in many instances.

Tire Abuse Penalized.—New tires will not be available for List A vehicles after May 1 when use of a recapped tire is practical, and no tires at all will be released after June 1 to anyone who abuses those he now has in use.

These provisions are contained in Amendment No. 7 to the Revised Tire Rationing Regulations, announced today by Price Administrator Leon Henderson. Effective date of the amendment was May 1.

The severe rubber shortage dictated the OPA decision that no vehicle on List A which includes only those operated in the most essential services, will be considered for a new casing if a recapped tire will serve. However, in the case of vehicles operated in hazardous services where the safety factor is a consideration, the local rationing board may issue a new tire certificate. Although this provision is primarily to take care of police and fire vehicles, it is considered broad enough to cover other List A eligibles when the board is convinced of their need for new tires.

The release of new tires was restricted in order to conserve the present stock for expected heavier replacement demand later when tires now on cars became unserviceable.

Neither new nor recapped casings will be released to anyone who in the opinion of the local rationing board has not given proper care to the tires to be replaced. To give time for widespread publicity, this part of the amendment does not go into effect until June 1. After that date, anyone who presents an inspector's report that a tire cannot be made fit for recapping or retreading will be called upon to show that it did not become unusable through abuse or neglect.

Denial of tires to those who misuse them is designed not only to forestall deliberate driving past the point where a casing is recappable, but also to prevent overloading and neglect.

Tire Rationing to OPM.—Authority to ration all types of tires, including synthetic, for all purposes, including industrial equipment, was delegated to the Office of Price Administration by the War Production Board on May 6.

Under previous delegations of authority by the WPB, the OPA had power to ration tires for commercial as well as passenger use, but some confusion existed as to the jurisdiction over tires for certain types of industrial equipment. The new regulation (Amendment No. 1 to Supplementary Directive 1-B) makes clear that power to ration this type of tire resides in the OPA.

The amendment also extends the rationing power delegated to OPA by WPB Directive No. 1 to cover all tires, whether made of crude, scrap, or reclaimed rubber, of any of the substances commonly known as synthetic rubber.

Excepted from OPA control by the amendment are tires to be sold for military use or export, or tires for use on airplanes. The WPB also retains control, under the Rationing Regulations, of tires for vehicles in the hands of manufacturers, distributors, and retailers.

The delegation contained in the amendment supersedes the power delegated by Rubber Order, M-15-c, but all actions heretofore taken by the OPA pursuant to the latter order, or in accordance with other rationing directives or regulations are ratified, approved, and confirmed.

Tires: Hand Trucks.—The War Production Board on May 7 ordered elimination of all but the most essential uses of rubber tires on hand trucks. It is estimated that they required more than 500,000 rubber tires last year.

Limitation Order L-111, effective immediately, prohibits any manufacturer from delivering rubber-tired hand trucks, any person from accepting delivery of such trucks or of rubber tires for replacement purposes, and any person from delivering rubber tires except on authorization to a hand truck manufacturer for use on such trucks. All other uses of rubber in the manufacture or assembly of these trucks is prohibited.

Exceptions are granted where the use of rubber tires is necessary to prevent explosion hazards, and to avoid accidents in the handling of explosives, damage in transporting unbaked grinding wheels or green foundry cores, or damage to delicate instruments which are an integral part of the truck. Persons receiving delivery of a truck or a spare rubber tire must certify on the purchase order that the equipment is required for one of the specified essential purposes.

Manufacturers are not allowed to accept delivery of rubber tires unless expressly authorized by the Director of Industry Operations. Application

for such authorization may be made by filing with WPB on Form PD-468, on or before the 10th day of each calendar month, an estimate of requirements for the following calendar month.

The restrictions on delivery of rubber tires for replacement purposes will remain in effect until the Office of Price Administration adopts regulations governing their delivery under the tire-rationing program. All other provisions of the order will remain in effect until revoked by the Director of Industry Operations.

The order also provides that no person shall accept delivery of another hand truck to replace a rubber-tired truck on which the tires have worn out, "until he has made a diligent effort" to replace the wheels on the rubber-tired truck in his possession.

Tires: Heavy Trucks. — The War Production Board has made it possible to equip heavy trucks produced under existing quotas with tires and tubes. Amendment No. 7 to Limitation Order No. L-1-a, effective April 25, recinds the prohibition against putting tires and tubes on new heavy trucks except for delivery to dealers.

It is estimated that approximately 5,000 heavy trucks can be equipped with tires and tubes under the amended order. Arrangements have been made by the Rubber and Rubber Products Branch of the WPB to make these tires available. Only trucks having a gross vehicle weight of 16,000 pounds or more are eligible to receive tires and tubes under the amendment.

Truck Care.—Trucks taken out of service in accordance with the war conservation program as well as new trucks not yet allocated should be stored with the utmost care, Joseph B. Eastman, Director of the Office of Defense Transportation, said today.

Certain specific procedures should be carried out to prevent deterioration of such vital equipment Mr. Eastman said.

The first rule calls for storage places which give the trucks complete protection from the weather. As an added precaution, they should be covered by paper or cloth to keep dust and dirt from getting into the moving parts.

Cooling systems should be drained and flushed, and the fuel tanks and lines also should be emptied to prevent sediment formations.

An ounce of lubricating oil should be poured into each cylinder and the engine slowly turned over to give the cylinder and piston walls a protective coating.

Oil also should be applied to all other moving parts which are accessible, while grease should be left in transmissions and differentials. Unpainted parts of the chassis should be coated with grease.

The ODT also said the clutch should be disengaged and the emergency brake released. Batteries should be removed for periodic servicing.

Tires should be removed without deflating and stored in a horizontal position in a cool, dark place.

Used Machinery. — A comprehensive regulation establishing maximum prices for machines and parts not covered by other price schedules was announced in May by Price Administrator Leon Henderson. All outstanding "freeze" letters and "informal agreements" covering machinery are superseded by the new regulation.

The measure — titled Maximum Price Regulation No. 136—is part of the Office of Price Administration's overall formal price stabilization program.

Effective May 18, 1942, the new regulation specifies October 1, 1941 prices, for the machines and parts it covers, at all levels of distribution except retail. October 1 rentals for machines are also established as maximum rentals.

But giving special recognition to the requirements of the contracting out program, the regulation specifically excludes certain sub-contracted parts and subassemblies manufactured for incorporation into another machine by the buyer. This will exclude many specially-designed parts for munitions. Informal price action is expected in this field in the near future.

Excepted from the regulation, too, are machine tools, farm machinery and rentals of construction and road equipment which have their own individual maximum price regulations.

In addition to providing top prices for new machines, the comprehensive regulation states formulas for maximum prices for rebuilt used machines and parts, and other second-hand units.

Maximum prices for rebuilt and guaranteed second-hand machines are established at 85 per cent. of the October 1, 1941 net price of the nearest equivalent new machine.

For other second-hand machines, maximum prices are set at 55 per cent. of the October 1, 1941 net price for nearest equivalent new machine.

Priority ratings and heavy concentration of machinery producers on war industry needs recently had been bringing sharp upswings in average prices commanded by used units.

Study Sources of Graphite Supply

Graphite early was placed on the list of "critical" raw materials, and the Bureau of Mines immediately resumed studies of several different aspects of the situation, one of which was the investigation of domestic graphite suitable and adequate to supply not only normal needs but also increased requirements for the defense program.

Up to the present, Alabama graphite seems to be the most promising, as tests show that it more nearly approaches flake graphite of the type that formerly was obtained from Madagascar. If the methods devised by the Bureau of Mines for treating the raw material prove practical commercially the Alabama deposits will supply the market for coarse-flake graphite. This kind of graphite seems to be essential to the manufacture of crucibles in making brass, other copper-alloy castings, and special steel castings for various munitions and defense industries, and is used also for stoppers to regulate the flow of steel from ladles to ingot molds.

As a result of Bureau of Mines experiments at its southern experiment station at Tuscaloosa, Alabama, in cooperation with the University of Alabama, improved methods of treating crude-flake graphite having been developed that give considerably higher yield of relatively coarse flake.

In tests of 22 samples of the crude graphite, Bureau chemists found a wide variation, but several of the samples responded readily to the Bureau's concentrating technique and resulted in a medium-coarse flake product containing 85 per cent. or more carbon with a favorable recovery.

According to Bureau research workers, under favorable milling conditions a yield of about 47 pounds of coarse-flake graphite per ton of crude material might be expected from the most promising of the Alabama samples. An additional 40 pounds of small-size flake graphite suitable for marketing for other uses would be recovered as a by-product.

EDITORIAL

Freedom of the Press Abused

BECAUSE of the more permanent nature of their utterances, as compared with those of persons who express their views only orally, writers and editors have a peculiar responsibility when they set their opinions in type. In casual conversation, in *ex tempore* speaking from a platform, in the heated controversies that often develop from idle chatter, in all the momentary contacts of day-to-day living slips of the tongue, careless misstatements, deliberate falsehoods, expressions of deep-seated prejudices and personal likes and dislikes, the use of defamatory language, all these are the common experiences of everyone. They irritate, embarrass, confuse, humiliate and madden us for the moment, but their effects are generally only temporary, they affect only a few persons, they operate usually only in the field of the emotions.

But the man who presumes to inform by the written or printed word, the man who gives to his opinions the finality of a permanent record speaks with assurance, his language is exposed to textual and factual criticism, his judgments invite examination and attack, he lays himself open to the onslaught of a multitude of readers. Because of the formal nature of his remarks, he must assume a greater responsibility than the casual speaker, he must be prepared to defend his opinions and to verify his statements, he must realize that what he says has been made into an unchangeable record which bars him from carefree disavowal or the refuge of alleged misquotation. His obligations to his readers, to himself, to the canons of good taste, and to the profession of which he forms but a small part should make him fully conscious of a responsibility that transcends any similar obligation imposed on the average citizen.

Familiarity with the editorial policies of numerous important daily newspapers has impressed upon us the fact that too many editors of influential papers do not look upon their obligations with that seriousness which, in our opinion, should be the guide of every writer. An examination of several of the most widely read newspapers reveals, even in recent months, what amounts to more than rashness of statement, it is tantamount to gross indifference to public well-being and national safety. It would be difficult to decide in many cases whether their editorial expressions are not in fact treasonable or seditious, whether they do not in fact actually aid the country's enemies and weaken its efforts by their carefully phrased suggestions of ideas designed to undermine confidence in its leaders, in its institutions, and in its ability to defend them against attack from without and within.

After this war has ended and we recall those who helped this country in its winning of it and those who obstructed its activities by criticism born of self-interest, political prejudice or a deliberate desire to help its enemies, prominent places in the list of its opponents within our borders will be occupied by a group of leading daily newspapers who have spared no expense, no effort, no clever innuendo, no skilful falsification to mislead their readers. The New York *Journal-American,* the New York *Daily News* and the *Chicago Tribune,* to name only those most widely known, will long be remembered as the ones who did much to destroy confidence in America's war aims, to belittle its objectives, to weaken its efforts by attempting to create disunity within. Their publishers—affectionately dubbed "Helping-Hitler" Hearst, "Pull-no-punches" Patterson and Colonel "What-a-man" McCormick—have earned their niches in the "Hall of Doubtful Fame" of the future. Among the actions for which one or more of them will be remembered are the adoption of Axis propaganda as themes for editorial use, the projection of misstatements which have been immediately seized upon by Axis broadcasters as signs of America's impending cracking-from-within, and the confusion of their readers by suggestions in the field of strategy that are dangerous to American safety.

Listen to Mr. Hearst speaking of our government and saying that it "neglects the interest of our own America . . . in order to be a big shot and a big sap for every foreign country and every alien people in the world." (March 10, 1942.) And, on the Pacific problem, "Certainly it is not Japan which is precipitating this war with the United States." (December 4, 1941.)

And hear Mr. Patterson on aid to Russia: "If thereby we strip ourselves of adequate defenses . . . that will be OK by the Russia firsters . . . no matter what calamities it may bring on us. The main thing is to save Holy Russia." (February 6, 1942.)

And here is the inimitable Colonel McCormick talking on Japan: "What vital interest of the United States can Japan threaten? She can not attack us. That is a military impossibility. Even our base at Hawaii is beyond the effective striking power of her fleet.' (October 27, 1941.) This is the same "military authority" who lectures on military history and strategy over the radio on Saturday nights!

PERHAPS these men are not aiding the enemy deliberately, but it is difficult to see how they could do so more effectively than by utterances such as these, which are not isolated examples. This entire issue could be filled with quotations that disclose as much understanding of the facts, as high a regard for the interests of America, and as deep a sense of editorial responsibility as are revealed by these examples. Charles E. Coughlin, Gerald Winrod, Charles B. Hudson, David Baxter, Hermann Kissinger, Mrs. Elizabeth Dilling, and their kind seldom did more in their magazines or books to disturb and confuse American public opinion, to spread un-American doctrines, and to hamper this country's war efforts, yet every one of these persons is under government scrutiny for their doubtful loyalty to the American nation.

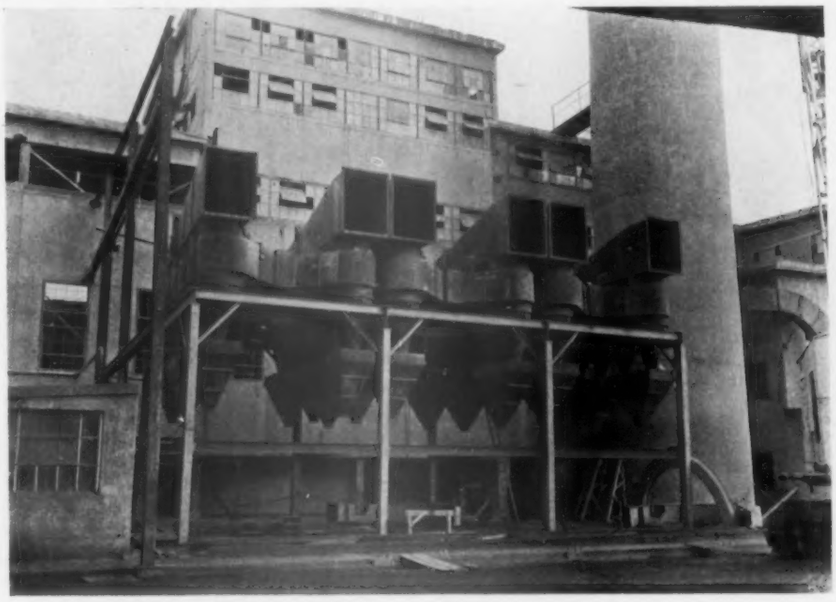
Dewey Installs Direct-Firing System, Clinker Coolers, Stack-Dust Collectors

THE plant of the Dewey Portland Cement Company near Buffalo, Iowa, when built in 1927, incorporated most of the features of design and equipment a well-designed cement plant was then supposed to have. The many additions and changes which have since been made are no reflection on the original design of this plant; rather they are indicative of the vast strides that have been made in cement-production technique since this plant was built.

The latest improvements include a new coal handling and preparation system which was installed late in 1941. This supplements the coal dock which was built in 1939 and makes possible full utilization of the advantages of the three Babcock & Wilcox direct-firing coal mills installed in 1937. Early in 1941 a Fuller grate-type clinker cooler replaced the rotary cooler under one of the three rotary kilns. The installation of a Buell dust-collector between the waste-heat boilers and the kiln stack was begun late in 1940, but this was not connected until April, 1942, because the great demand for cement made it impossible to shut down the plant for this purpose. Other improvements made are described later in this article.

A complete description of the original 2-kiln plant was published in the October 26, 1927 issue of PIT AND QUARRY, shortly after it was built.

In 1930 the first installation on a commercial scale of closed-circuit wet raw grinding was made at this plant. A third kiln with its attendant waste-heat boiler, etc., was installed, all kilns were equipped with Oliver United slurry filters (which were enlarged 16 per cent. in 1939), additional cement-storage silos were built, and other changes were made. An article in the April 8, 1931 issue of PIT AND QUARRY described all the improvements.



The three-unit system which will collect stack dust.

In May 1939 the locomotives and cars in the quarry were replaced by a fleet of three Easton TR-10 semi-trailers. The 42-inch Allis-Chalmers gyratory primary crusher was moved into the quarry and a 30-inch by 450-foot inclined belt-conveyor replaced the former incline and hoist to the crusher building. These and other improvements were described in an article in the July, 1939 issue of PIT AND QUARRY.

Previous to 1931 coal was received by railway and all the cement and rock shipments were made in the same way. In 1931 a dock was built on the bank of the Mississippi River near the plant so that rock could be shipped for flood-control work along the river. In 1932 this dock was extended, and equipment was installed for loading cement into barges for shipment to the many dam- and lock-construction projects which were then getting under way. In 1939 it was further extended so that coal shipments from the Southern Illinois fields could be received in barges. The dock is now 900 feet long, and about 400 feet of its length is timbered. The next step will be to increase the dock length of 1,400 feet and to concrete it for its full length with piers and cribs.

Earlier the coal was unloaded from barges to stock-piles by a crane and it was then transferred to the present conveyor system to be sent to the plant bins. The coal is now unloaded by a Marion electric crane

Crane unloading coal for rehandling by scraper.

with a 2¼-cubic yard clam-shell bucket into a concrete hopper from which it can be fed either to the conveyor or to the new scraper-storage system. A 5-cubic yard Sauerman "Crescent" scraper stockpiles the coal or brings it back to the hopper as needed. It works on its maximum radius of 350 feet for only a part of its arc at present. Later a switch track and other obstructions will be removed to allow utilization of this radius all around. The storage capacity will then be about 45,000 tons, which will be enough to keep the plant operating at its capacity for the entire winter season when the river is closed to traffic. The scraper system will then be

Electric crane unloading coal from a barge alongside dock.

Most of the switching is done with this 42-ton Diesel-electric locomotive.

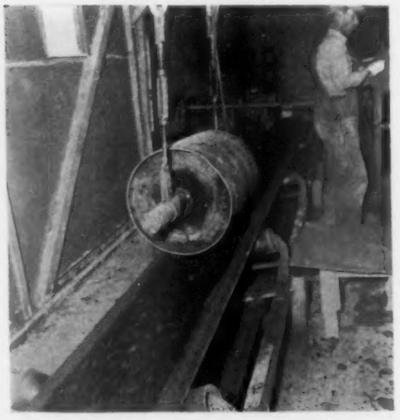
equipped with a traveling tail tower which will be driven by a 7½-horsepower motor and will run on a 12-foot-gage track. The scraper system is operated by a 2-drum Thomas hoist which is driven by a 150-horsepower electric motor. The operator sits on the second floor of the concrete hoist-house from which point he can observe all operations. The hoist is on the first floor and is controlled by lever connections to the control floor.

Under the coal hopper is a Chain-Belt reciprocating feeder which discharges the coal on an 18-inch by 360-foot belt-conveyor. The amount of coal entering the plant is recorded by a Fairbanks-Morse conveyor scale. The conveyor originally had a Dings magnetic head pulley to remove tramp iron from the coal but this did not work very well because some of the wet coal would adhere to the iron and drop with it on the pile. This pulley is now suspended lengthwise above the conveyor to pick up the iron, and any coal adhering to the belt is scraped off.

The coal is discharged on a 2½-by 4-foot Link-Belt vibrating screen which removes the oversize coal, excelsior, wood and any other refuse. When the coal runs unusually large or when it is frozen into lumps, this oversize is discharged into a Link-Belt coal crusher. An 18-inch belt-conveyor, 360 feet long and with a slope of 14 degrees, carries the coal to the top of the kiln building, where it is distributed into new 75-ton steel bins over the three Babcock & Wilcox mills. These bins rest on extra-heavy foundation piers which were installed at the same time as the mills and they replace the original 20-ton bins.

An automatic record of the fuel going to the coal mill is kept by this conveyor scale.

The original coal installation in this plant included a coal-storage building, a drying-and-grinding department and a pumping system serving the above-mentioned 20-ton bins. The coal was unloaded from cars to the storage building. Later the coal was received in barges and was transferred to cars and then to the storage building. When the B & W mills were installed a bucket-elevator and a belt-conveyor carried the coal from the storage building over the tops of several other buildings to the kiln building. The present system has effected great savings in handling costs and the coal mills have contributed greatly to the improvement of other phases of kiln



Tramp iron is removed ahead of the mill by this magnetic pulley suspended over the coal conveyor.

operation. The mills also make possible the use of cheaper slack coal.

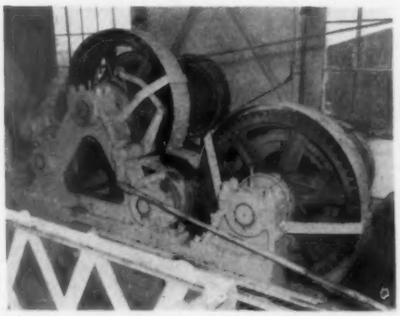
The Fuller 5- by 25-foot grate-type clinker cooler is installed on the Number 2 kiln of the three 11- by 175-foot kilns. It replaced an 8- by 70-foot rotary cooler. It is cooling the clinker to from 150 to 200 degrees F. which compares with the 300- to 350-degree temperatures

The 5- by 25-foot grate-type clinker cooler on one of the three kilns.

with the old cooler. Even better results are expected after certain control equipment is installed. In order to make this installation the cooler floor had to be lowered 4 feet and this makes it possible to install the other two grate coolers at any time without difficulty.

The Buell stack-dust collector is known as Number 10½ A2, Type A C 130 and consists of three units of 12 cells each. This collector will be connected to the flue from the damper following the waste-heat boilers to the 15- by 200-foot concrete kiln stack. This will make it possible to use the collector or bypass it as desired. The pressure resistance created by the dust-collector is overcome by three paddle-wheel-type fans driven by 100-horsepower motors. These fans supplement the original draft fans following the boilers. The dust collected will be returned by screw-conveyors, continuously and in equal quantities to each kiln, through Manitowoc Minogue feeders 25 feet from their feed ends. One of these feeders went into operation in April 1942.

One of the Raymond low-side mills in the old coal building has been converted into a high-side mill and is being used for the production of minus-300-mesh pulverized limestone which is sold for special uses. Another Raymond mill has been



Double-drum hoist which operates the coal scraper system.

similarly rebuilt for the production of minus-100-mesh material. New conveyors and other necessary equipment were also installed in this department.

The two original old-style bag-

Direct-firing coal mill on Kiln No. 3. Feed is at left, fan at right.

One of the new 4-spout packers. Note the upper- and lower-level indicators on the feed hopper.

packers in the pack-house were recently supplemented by two new St. Regis Number 113-FC 4-spout packers and a third one is to be installed later. The feed bins over these packers are equipped with upper- and lower-level Bindicators. The loaded bags are carried on 30-inch-wide Cyclone woven-wire conveyors to the loading platforms. The older and slower machines have been retained for use when additional capacity is needed. Additional dust-collectors have been installed in this department.

In 1939 a 100-ton-capacity Fairbanks track scale was installed to facilitate bulk shipments by railway. This is connected to the bulk car-loading gates in such a way that the gates are automatically closed when the predetermined weight is reached.

A 44-ton Davenport-Besler Diesel-electric locomotive was recently purchased and is being used for switching cars. It supplements a 30-ton locomotive of the same make and type and two older steam locomotives that had been used in the quarry.

A Sauerman 2-cubic yard slack-line cableway excavator was recently installed in the company's clay pit. This system has an 80-foot mast and a 600-foot span. The bucket is operated by a 2-drum Thomas hoist. The bucket discharges the clay into a hopper from which the trucks haul it to the plant. In 1939 new trucks were installed at this pit and a new access road was built.

A new DR7 Caterpillar tractor with a 13-foot angle dozer has been added to the coal storage. It is used to pack the coal so as to remove as much of the air as possible and prevent spontaneous combustion while in storage.

Performance Measurement and Mechanical Control

Part VII

By R. W. ROTHROCK, Ph.D.

THE value of temperature and other measuring devices applicable in the lime industry has, as intimated in earlier articles, seemingly been underestimated by many kiln operators. Particularly this appears true in vertical-kiln lime plants. One reason advanced is that operators believe the average kiln fireman knows when conditions are right without instruments. Any operator opposition to the use of instruments may at least in part be justified, for in the past even though some operators have tried they have

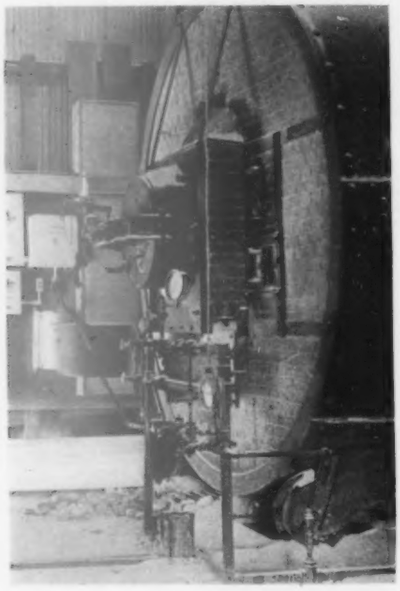


Figure 1. Radiation pyrometer applied to guide firemen in maintaining proper hot-zone temperature in a rotary kiln. (Courtesy Diamond Springs Lime Company).

been unsuccessful in attempting to use instruments profitably, particularly temperature-measuring devices that should have helped them in hot-zone control.

Lack of suitable thermocouple protection was probably one major cause for excessive difficulties in early installations. Then, too, early instruments available were slow to respond to temperature changes and also possessed poor ability to hold their calibration. The necessity of returning them to the manufacturer at relatively short intervals for calibration correction was troublesome. In modern instruments the manufacturers have overcome many of the earlier faults. The earlier operators were undoubtedly honest in their opinion that instruments were of little aid to experienced kiln operators, for under the conditions then existing instruments practically were without value, even for comparative readings.

Individual kiln operators and firemen are not alone to blame for the lack of a wide use of instruments in the lime industry. They and the instrument makers should pool their knowledge and both give the problem their earnest attention. Firemen's experiences are especially valuable to instrument makers and should never be discounted, in fact, the firemen's cooperation must be solicited. Their information and knowledge of the art are required to make instruments useful in vertical-kiln or any other furnacing practice. Experienced firemen know "how" to do things in kiln manipulation which will produce lime and they could be shown that the procedure of following instrument records repeatedly from one run to another will tend to show them "why" they really do them.

In contrast with the burning of Portland cement, it is important to consider in any discussion relative to the burning of lime that in the manufacture of cement one of the main objectives is properly to bring about cintering and fusion. This may be accomplished with a short blast-like, high-temperature flange. Nearly the opposite objective prevails in lime manufacture. Here the effort is to use a temperature just high enough and for a long enough period of exposure to calcine or burn the limestone most economically, but to avoid fusion or cintering. This is usually accomplished by application of a long, slow-burning, relatively low-temperature flame.

Temperature Control.—The usual rotary-lime-kiln, temperature-measuring equipment includes either a single instrument in the form of a pyrometer with the thermocouple located in the path of the exit gases, or this instrument with some means of determining the hot-zone temperature or the temperature of the lime as it is discharged from the kiln.

In one respect, for temperature control, rotary-lime-kiln operators have taken greater advantage of the use of instruments than the rotary-cement-kiln operators, for more of them have successfully adapted the radiation pyrometer to hot-zone control. Correlation between hot-zone and exit-gas temperature is considered a valuable means of control. Once the correct comparative temperature range between the stack end of the kiln and the hot-zone is established, the instruments mentioned make more certain that satisfactory temperatures may be maintained.

Lime-Discharge Temperature.—Several rotary-kiln plants have used the temperature of the lime leaving the kiln and entering the cooler as an index to hot-zone conditions. The object is to operate with a constant lime-discharge temperature. However, the discharge from a rotary

Figure 2. Raw-limestone-feeder drive arranged to change rate of stone feed in proportion to any change in kiln speed. (Courtesy Diamond Springs Lime Company).

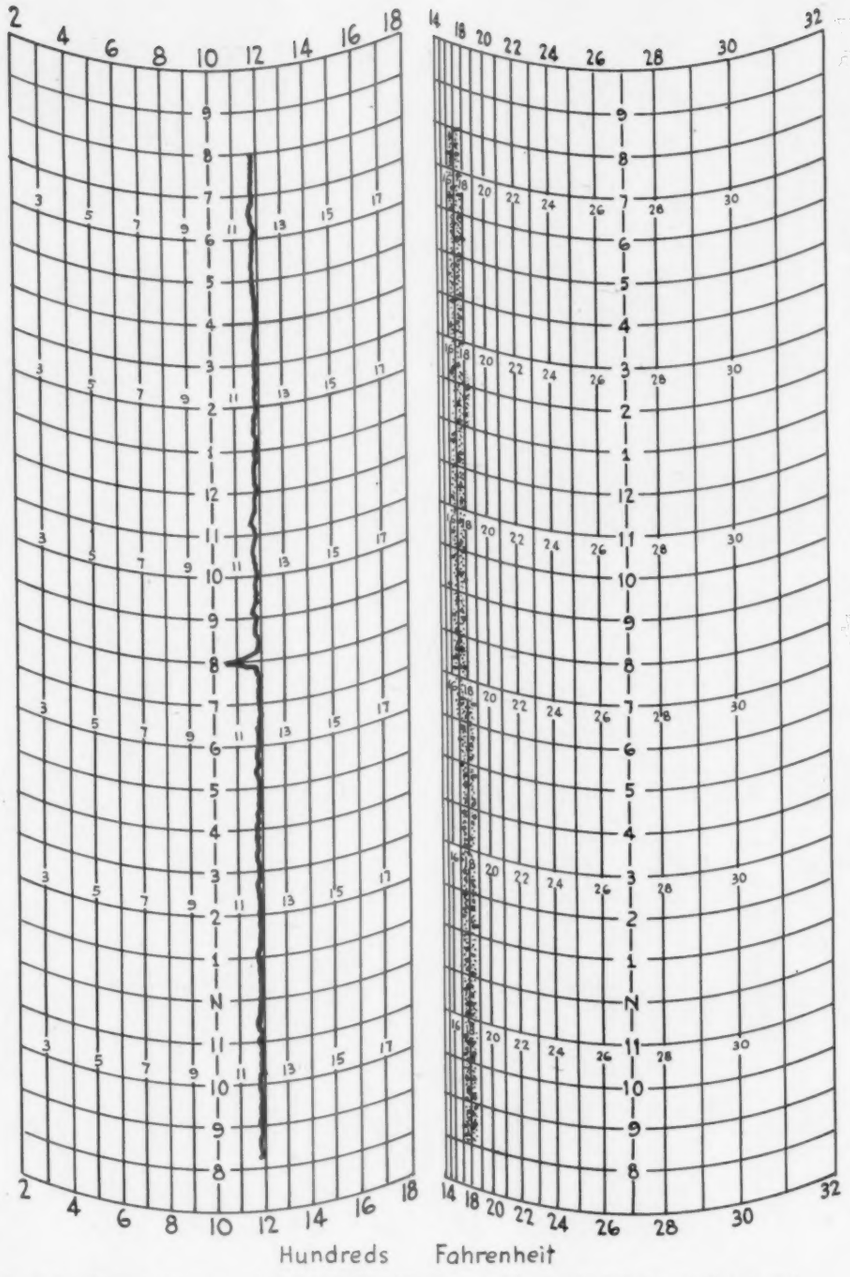


Figure 3. Temperature record of rotary lime kiln. This chart was in full view of the operator during the entire period in order that he might have every opportunity to observe the results of his work.

kiln is not really a steady stream and for this reason temperature fluctuations are frequently too great for lime-discharge temperature to be a very accurate guide to temperature control.

Radiation pyrometers operate upon the principle that the amount of heat radiating from a hot body is definitely related to the temperature of that body. They are readily adaptable to the measurement of temperature irrespective of the kind of fuel used. In illustration of their use in assisting the firemen in the lime industry Figure 1 shows a radiation pyrometer (perched like a T above the horizontal channel iron about the center of the kiln hood) measuring the hot-zone temperature of a rotary lime kiln. The hot-zone temperature and the temperature at the feed end of the kiln, or flue-gas temperature, are recorded on a single chart by the device seen at the left-hand side of the photograph.

In this same view there is seen a drum-like arrangement hanging directly below the radiation pyrometer. This contains a daylight lamp used by the operator to observe samples of burned lime removed periodically from the kiln. Gages and other devices on the pipe system are arranged to indicate and control the atomizing steam pressure as well as the temperature and velocity of the fuel oil as it is delivered to the single burner of the kiln.

Other control devices shown in the photograph include kiln-speed control equipment which also controls the raw-limestone feed since the raw-limestone feeder is driven by the same motor which drives the kiln through a chain and shaft arrangement shown in Figure 2. With such control arrangements and measuring devices this modern lime plant was able to produce products of superior quality and capture more than a prorated equivalent of the business in its field during the first year of its existence.

Usefulness of Temperature Record.—The use of the radiation pyrometer not only aids in improving the quality of lime burned by reducing to a large degree the amount of core and over-burned lime but also prolongs the life of the kiln liners, since, by observing the recorded temperatures closely, an operator can avoid sudden changes in kiln temperature and in turn avoid spalling of the kiln liners.

As a definite indication of the improvement in control possible when the radiation pyrometer is used for temperature measurement, an interpretation of actual recorder charts will be given for periods of kiln operation when the operator was purposely prevented from observing the record of kiln conditions and others when he was permitted to see the record chart throughout the period.

A rather good rotary-lime-kiln temperature-control record is shown in Figure 3. Temperature regulation was governed largely by the use of check draft and the rate of fuel feed while the kiln rotated at a constant speed. The right-hand record is that of a radiation pyrometer recording the hot-zone temperature. The left-hand record is a temperature record for the flue-gas end of the kiln. As the recording of the chart progressed it was in full view of the kiln operator so that he might have every opportunity to manipulate the control and observe the results of any changes he made. Progressively tabulated below are the changes that occurred during the period covered by this chart and caused either by nature or by adjustments made by the kiln operator. Some explanation is also given relative to the changes that occurred as a result.

9:30 A.M. Decreased draft, no change in fuel feed.

Indications: Stack temperature drops, hot-zone temperature rises.

10 to 10:45 A.M. Increased draft.
Indications:
Stack temperature rising.
Hot-zone temperature lowering.

11 to 11:30 A.M. Reduction in fuel-oil supply.
Indications:
Both stack and hot-zone temperatures lowering.

11:30 A.M. Increase in fuel or reduction in atomizing steam without change in draft regulation.
Indications:
Increase in hot-zone temperature.
Increase in stack temperature.

12:30 to 1 P.M. Increase in draft.
Indications:
Stack end temperature rising.
Hot-zone temperature lowering.

1:00 P.M. Sharp decrease in draft.
Indications:
Stack temperature lowering.
Hot-zone temperature rising.

3:30 to 4:30 P.M. Increase in draft.
Indications:
Hot-zone temperature lowering.
Stack-gas temperature rising.

12:30 to 1:00 A.M. Further increase in draft with probable increase in oil, but not steam, to hold front end temperature.

3:15 A.M. Both oil and steam increased.
Indications:
Both stack and hot-zone temperatures rising together.

6:30 A.M. Oil and steam reduced.
Indications:
Both temperatures lowering together.

The troubles of the firemen with core are well illustrated by the chart shown in Figure 4.

8:15 A.M. Draft decreased slightly, rate of oil feed increased considerably.
Indications:
Sharp rise in hot-zone temperature with slight lowering of stack-gas temperature.

8:30 to 10 A.M.—
Apparently stone was not preheated sufficiently before reaching hot-zone. At 10:00 A.M. kiln began to deliver lime with considerable core. Operator reduced the speed of the kiln, increased the fuel-oil feed and at the same time increased the quantity of atomizing steam. This is indicated by the spreading out of the hot-zone temperature recordings between 10:00 and 11:00 A.M.

This procedure shortened the flame to a blast type, but for half an hour there was little change in the stack-gas temperature.

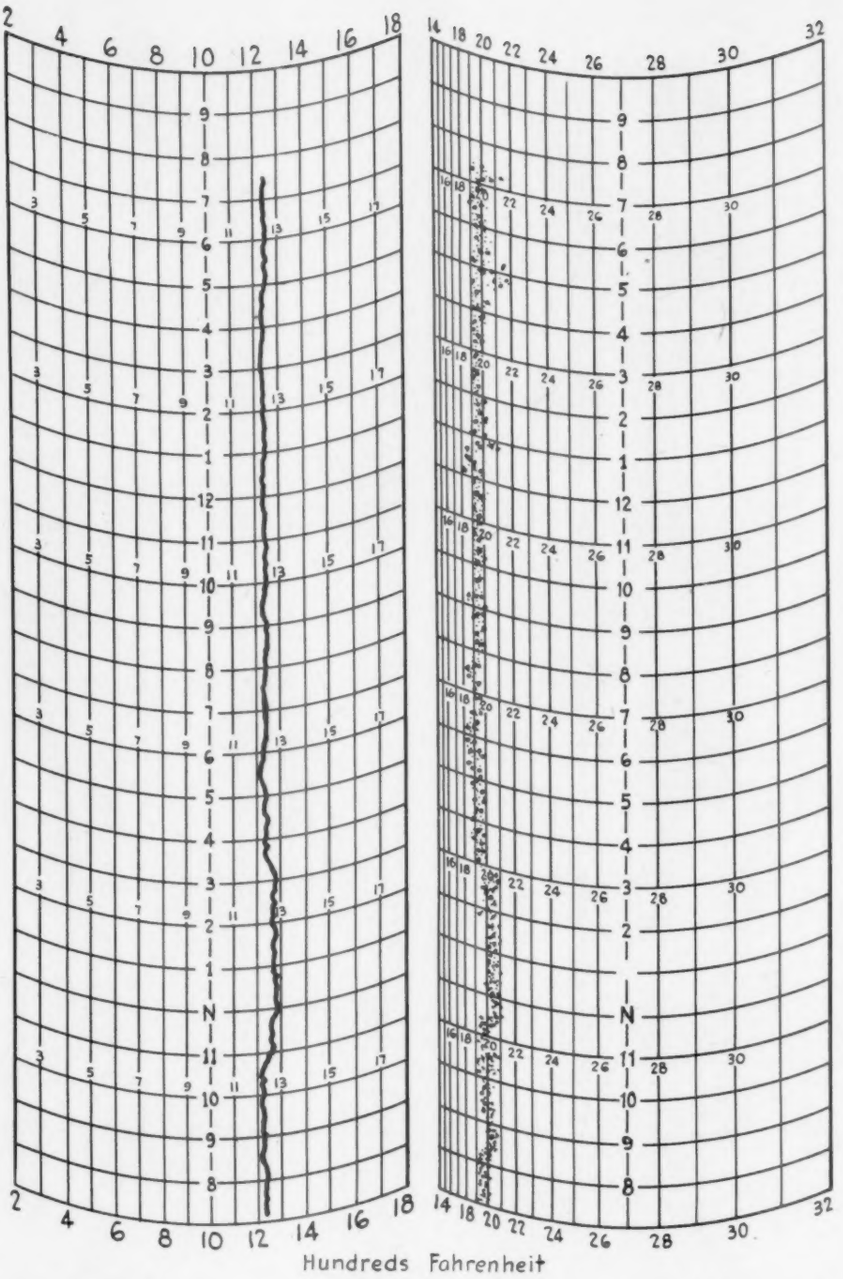


Figure 4. Temperature record of rotary lime kiln. This chart was useful in guiding the operator who was trying to eliminate traces of core without overburning the stone.

After 10:30 A.M. the increase in fuel, combined with the slowing down of the kiln had raised the temperature of the entire kiln, and lime without core appeared. The operator then set the kiln to its normal speed and increased the oil feed at the same time; this is shown by an increase of both hot-zone and stack-gas temperatures together. However, he had held the kiln on the low speed too long, over-burned lime appeared and it was necessary to cut down the oil feed as well as steam for atomization. There follows a gradual lowering of temperature at both ends of the kiln until 6 P.M., when conditions seemed satisfactory for continuing with hot-zone temperatures between 1,900 and 2,000 degrees F. and 1,220 degrees F. for the stack gas. It should be noted that at 1:00 A.M. and again all the way between 4:00 and 7:00 A.M. the night operator was having difficulty avoiding the production of core and found it necessary to reduce the kiln speed and repeat the above procedure several times; this is shown by the spreading of the hot-zone temperature record.

This chart serves to show, further, other procedures of the firemen. Where the two temperature records

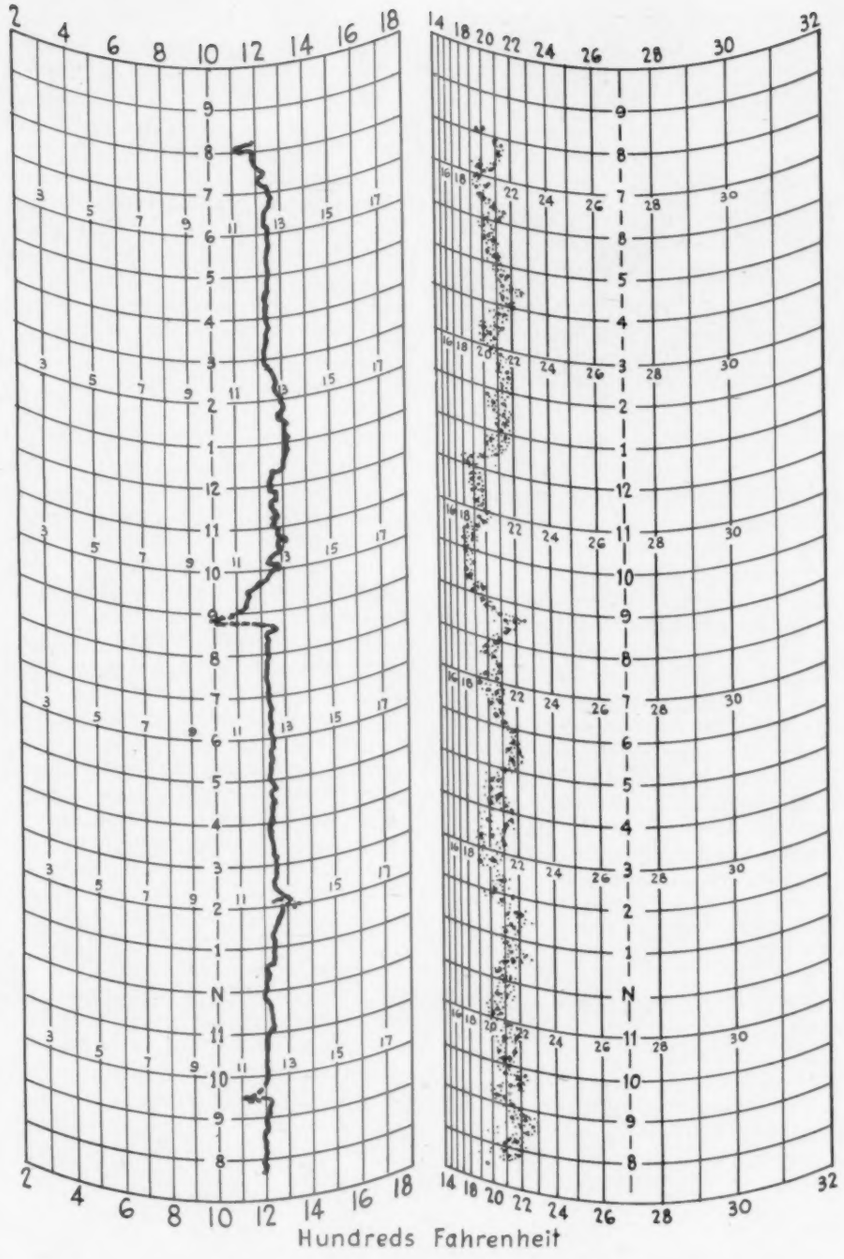


Figure 5. Temperature record of rotary lime kiln. Firemen purposely were not allowed to observe the chart during this period to see the effect of any changes they made, depending solely on their eyes for estimating kiln conditions.

tend to bend toward each other, as between 5:30 and 6:00 P.M., this is usually an indication that the operator has increased the draft with no change in the fuel or atomizing steam, while a spreading apart of the temperature curves indicates that the draft was decreased with no change in the fuel or steam. An increase in the draft with an increase in the fuel tends to lengthen the flame and the stack temperature rises with little or no change in the hot-zone temperature.

Other interpretations can be drawn from this type of temperature history; the interpretation, of course, will vary depending upon the size and construction of the kiln and the fuel used.

Some operators feel that knowledge of the stack-gas temperature alone is a sufficient guide for lime burning in rotary kilns. This may be true, but on these charts it is noticeable that the temperature changes of the stack gases alone are not necessarily indicative of changes in the hot-zone and *vice versa*. In fact, the stack temperature here is rather constant in many places, as for example between 6:00 and 7:30 P.M., while the hot-zone temperature varies considerably. So, while stack-gas temperature is important as a guide, it is not an indication of the temperature existing in the hot-zone of the kiln, which after all is perhaps most important, at least in respect to the overburning of the lime or the formation of rings. One wonders what the variation would have been without the guidance of instruments. To illustrate conditions that actually did prevail under such circumstances, observe the chart in Figure 5, where the same firemen operated the kiln but were purposely not permitted to observe the recorded chart to see the effect of any control changes they made. Throughout the period covered by this chart they were solely dependent upon their own eyes for hot-zone

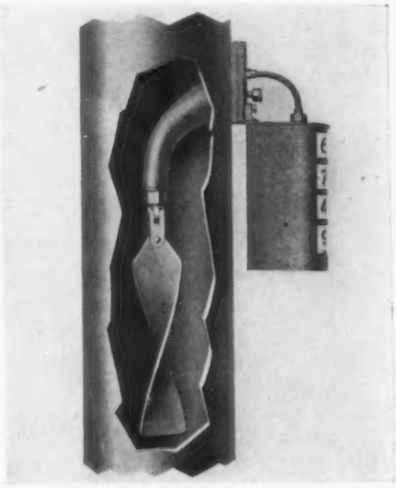


Figure 6. Meter for measuring flow of pulverized coal. (Courtesy Bailey Meter Co.)

control. The relative results indicated by a comparison of Figures 4 and 5 show the value of the efforts of man combined with the indications secured by measuring devices to provide a more constant and accurate control in kiln operation.

Figure 7. Meter showing record of fuel-to-air ratio during combustion.

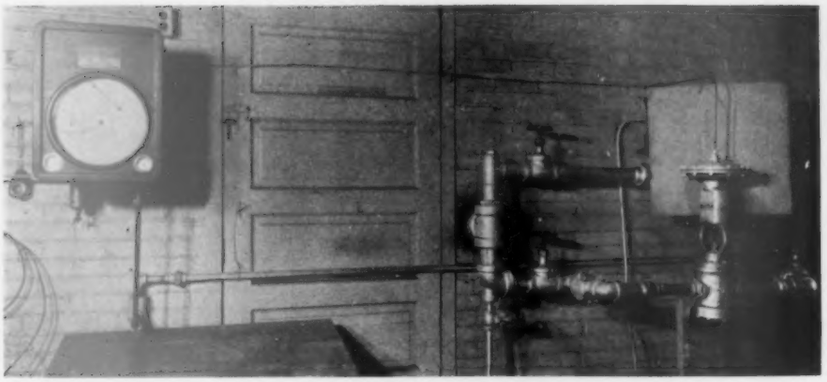


Figure 8. Equipment used to measure the flow of air-gas and steam, applicable to control in the manufacture of producer gas. (Courtesy Bailey Meter Company.)

However, temperature measurement alone is not considered sufficient to insure a most economic operation.

Combustion-Fuel and Air Ratio.—In the usual hood construction for both cement and lime kilns several inches' clearance is left around the fuel burner where it passes through the kiln hood. Also, where this end is not closed by a seal ring, secondary air is admitted through the space between the hood and the kiln shell. Consequently, where the primary air admitted with the fuel through the burner or through annual openings near the burner is metered, the amount should be less than that required for combustion. For economic efficiency the amount will vary for different plants as well as for

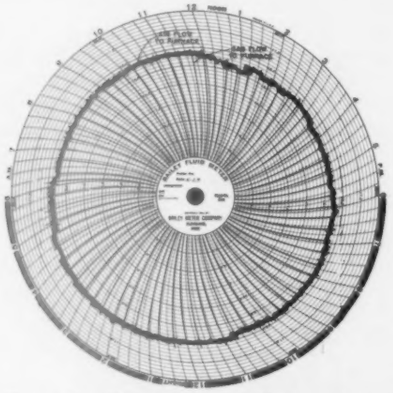


Figure 9. Charted record of air and gas supplied to a furnace operation similar to producer-gas manufacture. (Courtesy Bailey Meter Company.)

different kilns in the same plant. The correct ratio of air to fuel in the burner can only be determined by experiment and can only be accurately maintained through use of pressure and volume measuring devices.

Type of Flame.—In the use of rotary lime kilns there is a very decided preference for the long flame of low temperature. The length of the flame can be controlled to a considerable extent by a proper arrangement of the air inlets, the position and direction of the fuel inlet, and the velocity with which the fuel enters the kiln. With a given condition for the entrance of fuel a long flame will be best obtained by admitting air parallel to the fuel with the least turbulence possible. When air is allowed to enter through several openings, or around the edge of the kiln, there is a tendency to cause turbulence and a short flame.

When using gas as the fuel, it is possible to change the length of the flame either by changing the velocity of air or fuel gas, or by the method of admitting air to cause or prevent turbulence. Flow meters, though readily adaptable, are not too frequently used. Nevertheless, properly applied flow meters would contribute toward efficient hot-zone temperature control.

Pulverized Coal.—Because of ash and unburned-fuel contaminations, pulverized coal is seldom used for rotary-lime-kiln firing where the lime is to be sold for commercial use. Even so, meters for recording screw-conveyor speeds and other types of meters like those shown in Figure 6 for measuring the flow of pulverized solids make it possible to feed predetermined amounts of powdered coal. Such meters, used in conjunction with air-flow meters and coal-temperature measuring devices, offer an economical opportunity equivalent to that of gas or oil.

Oil-Flame Control.—With oil as fuel the length of the flame depends largely upon the draft conditions, the pressure at the burner, the degree of preheating of the oil prior to its entering the burner, and the mode of atomization. Low pressures, with the oil highly preheated and not too highly atomized, but sufficient so that there is no dribble into the kiln as the oil leaves the burner, tends to produce a long flame.

Pressure gages on the atomizing-steam or air line, with indicating or recording thermometers, pressure gages and flow meters on the oil lines combined with stack-draft gages, make up the usual equipment used along with kiln-temperature recording devices to control oil firing. A number of manufacturers distribute instruments for showing these records individually as well as combined. One type of recording instrument showing the history of air to fuel used for combustion in oil firing is shown in Figure 7.

Producer Gas.—Producer gas is a composite gas made from coal. It contains chiefly carbon monoxide (CO), *hydrogen* (H), carbon dioxide (CO_2), and nitrogen (N). The reactions involved in a gas producer are essentially a combination of those occurring separately in the manufacture of air and water gas.

Air gas, which consists mainly of carbon monoxide, carbon dioxide, and nitrogen, results from passing air through a bed of incandescent fuel. The process is continuous. Water gas is similarly made by passing steam through an incandescent bed of fuel, forming carbon monoxide, carbon dioxide and hydrogen. This process is not continuous. The reactions occurring absorb heat. Therefore there is a cooling effect and the passing of steam must be stopped periodically while the fuel is again brought to incandescence by passing air through the fuel bed. These two processes are combined in the gas producer.

Although there are a number of uncontrollable factors affecting the efficiency of a gas producer in common practice, a recording pyrometer at the gas off-take and a recording thermometer in the air-blast pipe showing the temperature of the steam-laden air before it enters the producer, used in conjunction with air-flow-steam-flow meters and steam-pressure gages, give the operator a fairly good guide as to the reactions occurring and some of the conditions existing within the producer. A view showing a part of the measuring equipment applicable is shown in Figure 8. An actual record of results obtained in a quite similar measurement is shown on the chart in Figure 9.

Though seldom installed in mineral plants, the addition of a combustible gas ($CO+H_2$) and a carbon dioxide (CO_2) measuring device such as is used with blast-furnace gas, would give the fireman a more accurate guide to the reactions occurring within the producer and enable him to manipulate the control for the most efficient formation and delivery of producer gas to the kiln.

Conveyor Does Double Duty; Carries Two Sizes of Material at Same Time

THE Concrete Materials Corporation of Waterloo, Iowa for many years operated near Humboldt, Iowa, a plant which supplied much of the sand and gravel used in highway construction and other work in the northern part of that state. Originally built about 1914, this plant had been added to and rebuilt several times to increase its capacity and to conform to variations in the deposit before the present owners took it over in 1940. Early in 1932, after most of the best material near the plant had been worked out, a system for wasting in the pit some of the excess sand from the remaining deposit was installed. This system and the plant were described in the October 19, 1932 issue of PIT AND QUARRY. At that time a total of 225 tons of material had to be processed in order to obtain 50 tons per hour of gravel. Over a period of many years millions of tons of waste sand were piled up at this plant.

Discharge end of main conveyor. The splitter plate is barely visible through the moving material.

Finally, however, the deposit became exhausted beyond the point of economical recovery. Most of the plant equipment had become old and obsolete and much of the wooden framework had become unsafe. As a result it was decided to build an entirely new plant at another deposit rather than to try to salvage anything from the old plant. Only a few minor pieces of equipment which had been purchased in recent years were retained. Because most of the concrete paving in this area had been completed the former capacity was no longer needed. The new plant produces from 25 to 30 tons of gravel per hour, depending on whether a ¾- or 1½-inch maximum size is being made. About 30 tons of sand is also produced. This plant went into operation on April 15, 1941. Most of its output is used for building construction of various types.

This deposit, like the old one, is glacial in its origin. It is located 3 miles southeast of Humboldt and only about 2 miles northeast of the old deposit. There is from 1 to 1½ feet of overburden which is removed by the drag-line used for loading. The 12 to 15 feet of deposit above water level contains from 40 to 60 per cent. of gravel of which about 65 per cent. is over 1½ and up to 14 inches in size and is crushed. Below the water level the percentage of sand is much higher and enough of this material is excavated to keep the sand percentage at the desired point. In some places a bed of shale makes it impossible to get all the sand desired and in this case sand is hauled from the waste piles at the old plant.

Another problem is created by the presence in the deposit of iron oxide which occurs mainly in lumps. The scalping separation at this plant is made at the 1⅛-inch opening. The iron-oxide lumps are picked by hand out of the plus 1⅛-inch material to be crushed. The minus 1⅛-inch gravel is wasted, because of the difficulty of picking this material from it, and averages about 10 tons per hour. Experiments are being carried on with several methods of making this gravel usable.

A Link-Belt crawler drag-line with a 1¼-cubic yard Page bucket is used for loading in the pit. This was originally a 1½-cubic yard electric drag-line but is now powered by a Waukesha 4-cylinder gasoline engine. A Plymouth 12-ton gasoline locomotive hauls the 30-ton high-hopper ore cars to the plant, a distance of about 1,500 feet. The best results have been obtained by hauling one car on one trip and two cars on the next. The track hopper at the plant

This view shows the conveyor from track hopper, return conveyor from crushers and conveyor to the second scalping screen.

Gasoline-powered locomotive and carload of material over the plant hopper.

A general plant view with car and hopper at extreme left.

holds one carload and is equipped with grizzly bars to reject oversize boulders.

A reciprocating feeder discharges the material from the hopper on a 24-inch by 150-foot belt-conveyor. This discharges it on a 4- by 8-foot

Conveyor discharging crushed gravel onto vibrating screen used as a second scalper.

Niagara 2-deck vibrating screen with 2½- and 1½-inch wire cloth. The gravel passing over the top deck is carried on a 30-inch by 9- foot picking belt-conveyor to an Allis-Chalmers 14-inch McCully gyratory crusher. The gravel passing over the bottom deck is carried on a 24-inch by 15-foot picking belt-conveyor to a 30-inch Iowa double-roll crusher. The rejects picked out are dropped on a short belt-conveyor from which they are discharged into a car which, when full, is hauled away to a waste-pile.

The products of both crushers are discharged on an 18-inch by 60-foot belt-conveyor which feeds the crushed gravel to another 18-inch by 60-foot belt-conveyor parallel to the conveyor from the hopper. Washing sprays are used on the picking conveyors and a wiper on the discharge end of the return conveyor removes any chips adhering to it. This conveyor discharges the crushed gravel on a 3- by 6-foot Tyler Niagara 2-deck screen with 2- and 15/16-inch openings. The gravel passing over the top deck of this screen goes to the gyratory crusher and that over the bottom deck to the roll-crusher. The gravel falling through the bottom deck is sold for use in making concrete pipes, for curb-gutter work, etc. For ordinary concrete aggre-

Screen employed in the sizing of coarse gravel.

gates and commercial gravel 1⅛-inch wire cloth is used on the bottom deck of this screen.

An unusual feature is the use of the 24-inch by 110-foot belt-con-

Screw washer used to clean coarse gravel.

Material being passed onto one half of main belt-conveyor from one of the two scalping screens.

veyor which travels from this department to the screening building for carrying two separated materials simultaneously. At the feed end of this conveyor is a dividing board. The crushed gravel dropping through the bottom deck of the Tyler-Niagara screen is discharged on one side of this board, while the minus 1⅛-inch uncrushed material which falls through the bottom deck of the first screen is discharged on its other side. At the discharge end of the conveyor is a vertical steel divider plate which diverts the two materials into separate flows. It is, of course, not possible to keep these two materials entirely separate on the belt but

Whirler separator which overflows shale from fine gravel. An old pump shell was used in its construction.

the slight mixing that occurs is not important.

The crushed gravel is discharged on a 4- by 8-foot Simplicity 1-deck screen equipped with 7/32-inch cloth. The oversize drops into a 20-inch by 12-foot Eagle single-screw washer from which it is discharged into a bin. The material which passes through this screen goes to a 30-inch-diameter cone classifier along with the sand from the uncrushed-gravel department. The concrete sand from this cone is dis-

Screen and sprays which size and wash uncrushed gravel.

charged on a pile. The overflow goes to a second cone classifier from which plaster sand drops on a pile.

The uncrushed material from the "dual" conveyor goes to a 4- by 12-foot Tyler Ty-Rock 2-deck screen, which usually has ½- or ⅜-inch wire cloth on its top deck. On the bottom deck is 8 feet of .06-inch clear-opening and 4 feet of 3/16- or ½-inch slotted-opening wire cloth. A 3-foot-wide divider plate is moved up and down the slotted section to the point below which the sand fails to meet specifications. The material which falls through the screen below this point is wasted through a flume to a settling pond. All the material falling through the bottom deck above this point goes to the first cone classifier described above.

The gravel retained on the top deck of this screen is for the time being discharged on a stock-pile because of its iron-oxide content. This material may later be reprocessed.

The gravel retained on the bottom deck of this screen goes to a whirler separator, which consists of an old 4-inch centrifugal-pump shell laid on its side with a 30-inch-high steel barrel above it. The gravel is discharged into this device through a smaller

Scale which weighs out all truck shipments.

pipe inside the barrel and a cone spreads it into the shell. A stream of water entering the shell through what would ordinarily be its discharge opening sets up a swirling action and shale and other waste overflows the top of the barrel into a waste flume. The cleaned gravel drops through the conical bottom of the shell into a 20-inch by 12-foot Eagle screw-washer from which it drops into a bin.

A Bendelari diaphragm jig has also been installed on this floor and

Clam-shell crane stock-piling gravel near the plant.

efforts are being made to fit this into the flowsheet.

There are two 50-ton steel truck-loading bins under this plant, one for crushed and one for uncrushed gravel. There is also a 2-compartment wooden bin for loading sand into trucks. A Northwest crane with a 4-cylinder Twin City gasoline engine and a ¾-cubic yard clam-shell bucket does all the rehandling of the stock-piled materials and is also used to load trucks direct. A Ford truck with a 2-speed rear axle is used to build up the stock-pile of gravel. Boards are used as a runway and the truck is backed up on the pile. Other delivery trucks are hired as needed.

Most shipments are made by trucks to points within a radius of about 35 miles. Outgoing trucks are weighed on a new 37,000-pound-capacity Fairbanks truck scale at the plant office. For railway shipments the material is hauled in trucks to the old plant, where the cars are loaded by a belt-conveyor and weighed on a 130-ton Howe track scale.

The two sizing screens last mentioned are equipped with Link-Belt washing sprays. The water for these and for the classifiers is pumped a distance of 800 feet from the East Des Moines River by a 10-inch Goulds centrifugal pump which is driven by a 100-horsepower motor. United States belting and Link-Belt idlers are used on all the conveyors. General Electric motors predominate and G.E. motor-reducers are used on the feeder and the picking belts. V-belts and Link-Belt silent-chain drives are also used.

The company operates a small repair shop and the equipment includes a Hobart electric welder and acetylene torches. The electric welder is driven by a 6-cylinder Chrysler industrial engine and is mounted on a pneumatic-tired trailer. The growing difficulty of getting new machinery and repair parts has greatly increased the use of this equipment. Stoody metal is used for building up and hard-surfacing crusher concaves and rolls, bucket teeth, etc.

★ ★ ★ ★ ★ ★ ★ ★

★ To keep 'em flying, ★

★ keep on buying ★

★ Defense Stamps ★

★ and Bonds ★

★ ★ ★ ★ ★ ★ ★ ★

In this view are, from left to right: quarry loading operations, concrete central-batching plant, concrete-pipe plant, crushed-stone plant and aggregate-bituminizing plant.

Plants at This Quarry Produce: 1. Crushed Stone, 2. Concrete Pipe, 3. Ready-Mixed Concrete and, 4. Bituminized Aggregates

Same Company Also Has Sand-and-Gravel Plant on Temporary Location

FOR diversification there are probably few companies in this field which can match the record of the Plattsburg Stone Products Corporation of Plattsburg, New York, a city of 16,000 which achieved fame during World War Number I as the location of an officers' training camp. The products of this company are crushed stone, sand and gravel, ready-mixed concrete, concrete pipe and bituminized aggregates. All these are produced in separate plants, all except the sand-and-gravel plant being located at the company's quarry on the outskirts of Plattsburg. These operations can produce in an 8-hour day, 500 tons of crushed stone, 200 cubic yards of sand and gravel, 600 tons of bituminized aggregates, 60 cubic yards of ready-mixed concrete and 100 feet of 12- to 36-inch concrete pipe.

This company in 1934 took over the crushed-stone and asphalt plants of the Plattsburg Limestone Company, Inc., which had built them in 1929. The crushed-stone plant replaced the original plant which was built about 1924. In 1935 a second mixer was installed in the asphalt plant. In 1939 the concrete central-batching plant, the sand-and-gravel plant and the concrete-pipe plant were added. During the past winter the crushed-stone plant was improved by the installation of a reduction crusher and a primary-crusher feeder.

The quarry is in a deposit of blue limestone which has strata from 3 to 8 feet in thickness. This formation results in a smooth quarry floor for truck haulage and its slope of 2 inches to the foot affords perfect drainage to a sump. This drained water is a reserve for fire protection and enough hose is kept on hand to reach all the buildings. The face varies from 30 to 52 feet in height. The drilling is done with a Loomis "Clipper" electric well-drill. Blasts are made in single-row shots of from 8 to 15 holes each and bring down from 5,000 to 15,000 tons of stone. Trojan 40-per cent. ammonia explosives and Ensign-Bickford fuse are used and this combination averages about 5 tons of stone per pound of explosive. The drilling for secondary blasting is done with two Cleveland jack-hammers for which air is supplied by an Ingersoll-Rand portable gasoline-driven compressor.

Truck-mixer receiving a load at gravity-type batching plant.

An Erie 1-cubic yard steam shovel loads the stone into trucks, which haul it to the plant. The fleet consists of two Macks and a Brockway.

The stone has been discharged through a rail-lined chute into the 24- by 36-inch Farrel-Bacon primary jaw crusher, but a 3- by 12-foot Traylor traveling feeder is being installed to give a steadier feed to the crusher and increase its capacity.

The minus 4-inch crusher product is carried on a 20-inch belt-conveyor to a 3- by 6-foot Robins Gyrex 1-deck scalping screen. The plus-1-inch oversize is discharged into a 12-inch Traylor Bulldog gyratory crusher. Both the minus-1-inch stone falling through the screen and the product of this crusher are discharged on a 20-inch by 62-foot belt-conveyor, and a bucket-elevator feeds it to a 4- by 24-foot revolving screen which makes three sizes of stone—¾-, 1¼, and 2½-inch which are discharged into bins. The minus-½-inch stone dropping through the first 8-foot section of this screen goes to a 5- by 10-foot Kennedy-Van Saun 2-deck vibrating screen. This makes ¼- and ½-inch stone and dust.

The seven storage bins have a combined capacity of 1,000 tons and trucks are loaded through bottom gates.

In order to increase the capacity of the plant for the production of

smaller sizes of stone, and to provide for the recrushing of the larger sizes, a Traylor multi-stage reduction crusher has been installed. Stone from either the 1¼- or 2¼-inch bins can be discharged by gravity through chutes into this crusher, which produces a minus-½-inch stone. This is carried on a belt-conveyor to the elevator ahead of the sizing screens.

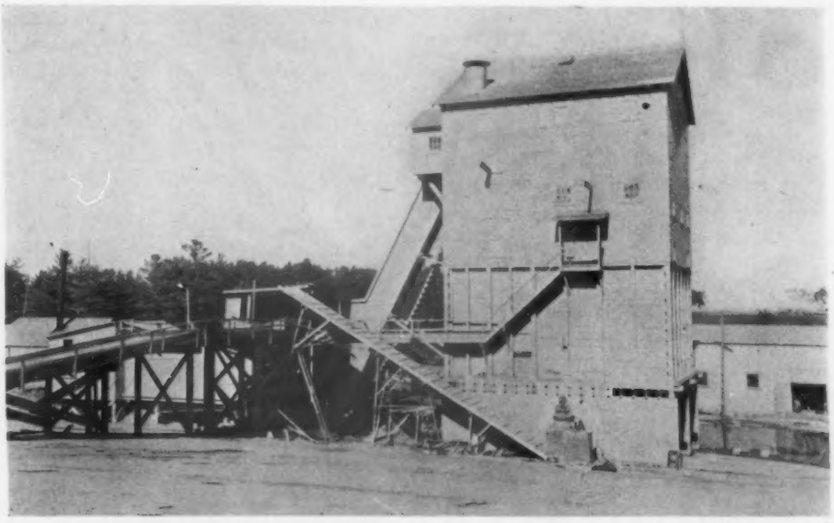
Gates V-belt drives are used throughout this plant. Large stock-piles are maintained from which trucks are loaded by a Nelson crawler-mounted loader.

At the asphalt plant stone is discharged from trucks into a hopper feeding a 6- by 30-foot Cummer oil-fired rotary drier. A bucket-elevator raises the dried stone to a 5- by 12-foot Robins Gyrex 2-deck screen which makes 3 sizes of stone and dust. The bins under this screen supply both sides of the plant. A bucket-elevator feeds the stone to a batcher over the 2-ton Cummer mixer. The original batchers and 1-ton Iroquois mixer are also used occasionally and these are equipped with Kron dial scales.

The asphalt used in making Type 3 or 4 steam-dispersion mix is unloaded from trucks into two 10,000-gallon tanks at the boiler-house. It is pumped through steam-jacketed lines to the batchers in the plant. The tar for Type 5 black-top is stored in a 20,000-gallon tank at a higher elevation and flows by gravity to the batchers.

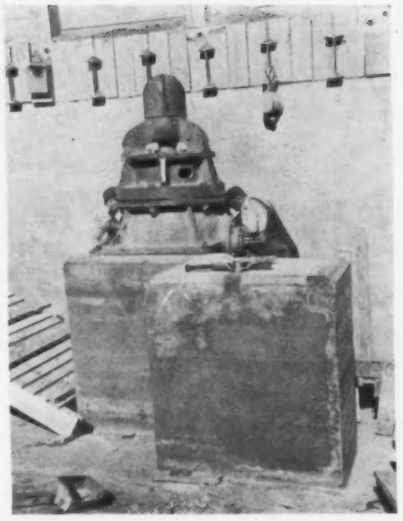
Most of the output of this plant is sold to contractors. The company owns two Foote spreaders, one 10-foot and one 12-foot, which are available for use by the contractors. Small jobs, such as driveways, which these contractors do not bother with, are done by the company with its own forces.

The concrete central-batching plant has been very busy, considering the size of the community in which it is located. Much of the output is sold to the city and county.



This view of the crushed-stone plant shows the truck ramp at left. New reduction crusher being installed at right.

A truck-load of aggregate being discharged from ramp into the dual aggregate-bituminizing plant. Quarry in background.



Close-up view of the multi-stage reduction crusher being installed.

The plant is located at the quarry face, so that truck-loads of sand and stone can be discharged direct into the 3-compartment, 60-ton Blaw-Knox bin. These aggregates are weighed in a Blaw-Knox 1-cubic yard batcher which loads the two 2½-cubic yard Blaw-Knox truck-mixers in 2½ batches.

Sacked cement is stored in a warehouse on ground level and is chuted to the batching floor, where it is dumped into a box for truck-loading. The mixing water is stored in an elevated tank from which it is fed into the truck-mixer tanks.

Sized stone being loaded into truck from a stock-pile.

Both mixers are mounted on International trucks.

The ready-mixed concrete for the pipe plant is discharged from the truck-mixers into a Blaw-Knox 2-cubic foot concrete-placing bucket in a depression in the floor near the door of the plant.

A Louden Monorail overhead electric traveling crane with a Shaw-Box electric hoist moves this bucket into position for the concrete to be discharged into pipe forms. This crane

also moves the forms and the finished pipe which are cured indoors for 7 days. An off-balance type of electric vibrator is attached to the forms while the pipe is being made.

A cage roll and an Allen jaw-welder are used to make the re-inforcing cages.

In this plant bell-and-spigot pipes are made in sizes up to 36 inches in diameter Tongue-and-groove pipes are made in sizes from 36 to 42 inches in diameter. A Black & Decker machine is used for testing the pipes and a special drill is used to cut cores from them for state tests. Most of the output is sold to the state.

The Iowa Manufacturing Company Cedar Rapids portable sand-and-gravel plant is located at a pit near Peru, about 10 miles south of Plattsburg. A Link-Belt Speeder 5/8-cubic yard gasoline shovel loads Ford trucks which discharge the material into the plant hopper. The equipment consists of an apron-feeder, a conveyor and a revolving screen—all of Iowa manufacture—and an Eagle screw-washer. Sand and one size of gravel are stored in bins at the plant.

The author; General Contractor B. J. Green; and Excavating Superintendent P. E. McCoy.

Excavating Speeded Up, Costs Cut With Preformed Wire Rope

By M. M. SMALL, Victory Sand & Stone Company, Topeka

Because of the all-out demand for speed in defense projects, and because of the large number of new jobs which are opening daily, the producer is faced with a real "priority worry" all his own: How to turn out the best job in the least time, and with the least wear on machines and equipment.

The importance of this was brought home to many of us when we studied the new OPM preference rating order P-100, issued in December '41. This was the form which replaced the old P-22.

P-100 states: "For the purpose of facilitating the acquisition of material for (1) the maintenance and repair of the property and equipment of producers as hereinafter defined and (2) the continued operation of the property and equipment of such producers, a preference rating is hereby assigned to the deliveries of such materials . . ."

In some cases our "priority worry" has been how to obtain replacements and repair parts—*now*. But as soon as we were over the hill on this and had overcome the difficulties in making replacements, we realized that we had another and even greater problem. We must keep our organization going double-time without more substitutions. We had to make our present equipment do the job, and do it in record time.

This, plus the additional task of constantly training new men because our trained operators were going to the Army and Navy and to technical defense jobs, caused us to study the operation of our machinery and equipment with double scrutiny.

I have found that by switching to preformed wire rope, for example, both time and money are saved. Especially is this true where partially trained men have to be relied upon for precision work. In every excavating job the cost of the wire rope is a large and important item. Many times it is the largest part of the maintenance charge.

Today, when every pound of surplus steel is needed to win the war and win it as quickly as possible, it is imperative to select equipment which gives the longest service and will best stand the variations of treatment afforded that equipment by many operators and many different operations.

While excavating for the new Mineral Research Building at the Kansas University, Mount Oread, Lawrence, Kansas, I have given preformed rope a good test. We are using it on both the Insley trench hoe and the Insley power shovel.

Because of the equal distribution of the load to each strand it lasts longer, and because it is free of internal stress it has greater resistance to fatigue. It has really enabled us to turn out the job faster, with fewer replacements and machine shutdowns.

The contract for the Mineral Research Laboratory was let in December 1941. Basil J. Green received the general contract. P. E. McCoy is superintendent of the excavating work for which I have the contract.

Shovel and trench hoe excavating for new Kansas University Mineral Research Building

Redoubled Effort Urged to Cut Rising Tide of Accidents Brought on by War

Mr. Curtis has, for the past 15 years, directed the successful campaign to decrease accidents in the cement industry. In this article he points out some of the conditions which are increasing the hazard since this country went to war and suggests 25 things to do about it.

IT becomes more obvious daily that world-war conditions are causing a great increase in accidents in American industry. Stone quarrying and processing plants are among those which are already feeling the impact severely.

Moreover, the outlook for bringing this situation under control is not what could be called bright. The causative factors are not easily dealt with and accident conditions may be worse before remedial measures can be brought fully to bear.

Here are some of the conditions which are boosting plant-accident hazards:

1. *Mental Disquietude.*—Distraction of workmen and their families as a result of world-war madness with its deluge of blood and destruction; American entry into the war; the effects of the draft on themselves and on their sons; the conviction that crushing tax burdens impend; the fear of economic ruin even though America and her allies win the war; and other equally disturbing subjects. The working people of this country are being assailed by a veritable mental bombardment of this kind. When the minds of workers are attracted away from their work heavy increases in accidents naturally result, particularly in the potentially-hazardous industries such as those which quarry, mine and process stone.

2. *Hiring of New Workers.*—Men are being employed in large numbers to replace those who are enlisting or being drafted for service with the armed forces as well as others, mostly skilled mechanics and electricians, who are going into the defense industries. The cement, stone and other industries of the same general group normally enjoy a low labor turnover and have done relatively little hiring in normal times.

One plant with which the writer is familiar employs 250 to 275 men. It required but 3 new men in 1940 but hired about 80 in a few weeks of 1941. Under such conditions, customary care can not be exercised in the selection, placement, training and supervision of new men. Plants are not prepared to meet such extraordinary demands. Increased accidents are almost sure to result.

3. *Quality of Replacement Workers.*—The trained men who are leaving are being replaced as far as possible but by untrained or insufficiently trained men. The average worker age in these industries has been somewhat above the all-industry average. In the present situation it will advance.

Many cement and stone plants now have a few women workers. Women have repaired cotton cement sacks for years. To-day some of these plants have reached the point where consideration is being given to the employment of women in the laboratories, as messengers and sample carriers and, in at least one case, as wipers and oilers in the power department.

4. *Rearrangement of Plant Personnel.*—When men leave, not only are new workers required, but it is usually necessary to shift the remaining members of the force from old jobs among hazards they know to new jobs among hazards with which they are not always familiar. In cement mills, men shifted to new jobs are experiencing accidents at a rate almost comparable with that experienced by newly-hired men.

5. *New Operating Procedures.*—Due to man changes and man shortage, operating procedures are necessarily changing and will probably have to be changed more. The supervisory staff in each plant is likely to be burdened further and find it difficult to give workers as much individual attention as in the past.

6. *Security of Plants.* — Plant security is receiving serious consideration almost everywhere and is actually threatened in some places. This has gone so far as to divert attention of plant supervisory staffs from regular safety activities to matters relating to the guarding of the plants.

There are other conditions as well that have important bearings. All that have been referred to above and several others that might be added are very real and most, if not all of them, are on the increase and will continue so for the foreseeable future.

These conditions are being reflected in current accident records of the Portland-cement plants. Five accidents occurred in 1941 for every 4 in 1940. One out of every three employees injured in 1941 had been employed less than a year. One out of every 4 employees injured in 1941 had been employed less than six months. There is an increase of 85 per cent. since 1939 in the proportion of injured who had worked 6 months or less on the job where injured. (This includes both new and transferred employees.)

Three classes of employees are suffering disproportionate shares of the total number of accidents:

(a) Those recently hired.

(b) Those recently moved from one job to another.

(c) Old men (10 years service and longer).

The latest classifications of cement-mill accidents confirms the earlier data, which show, unquestionably, that the problem being faced is, in the main, one of training and supervision of men; they do not reflect an especially dangerous condition of their surroundings. The month of highest accident rate in 1941 was perhaps the most nearly ideal month of the year from the standpoint of weather and other operating conditions.

So it appears evident that three of the four primary elements which follow (a, c and d) require particular attention:

a. Man quality—selection, placement, training and supervision of men.

b. Plant quality—conditions of the environment of the men, and of their tools and equipment.

c. Operating procedures and policies.

d. Executive interest.

If your plant has not yet felt the effects of at least some of the hazardous elements enumerated above, do not take it for granted that the excellence of your plant management or of your safety work is going

By A. J. R. CURTIS

Secretary, Committee on Accident Prevention and Insurance, Portland Cement Association

to keep your organization immune. Possibly, or probably, the evil moment just has not yet arrived. Don't take a chance. Those who have built up the most effective safety organizations have done so because they have not been willing to accept as good enough anything short of the very best.

Here are 25 suggestions for corrective measures. A complete list would be far more extensive:

1. Consider your employment procedures. Hiring techniques must be sound and thorough. Even though circumstances may compel the employment of persons below the high standards you would ordinarily set, at least know what kind of people you are hiring and, as far as possible, be governed accordingly. For safety's sake, as well as for other reasons, the hiring should be done by one man with the close cooperation of department heads or foremen. In smaller plants the superintendent should do the hiring. In larger plants it should be done by a personnel officer working as an assistant to the superintendent.

2. Do not put any new man to work without a thorough physical examination. Sometimes the practice is followed of deferring physical examination (in order to save bother and expense) until a probationary employment period has been completed. In so doing the employer takes a chance during the probationary period. In all dusty industries—even though process dusts may be known to be harmless—stereoptic X-ray pictures of the lungs should be included. Physical examination should be extended to cover all employees.

3. For the protection of the plant and particularly to safeguard its employees all the latter should be photographed and finger-printed and identification cards and badges provided to each. Apply to the F.B.I. for information as to how to proceed.

4. Do not hire any applicant on a permanent basis until completion of a probationary period of 60 days.

5. Hire only persons who speak and thoroughly understand English. It is highly desirable that employees read and write English as well.

6. If your plant does not now hold membership, join the National Safety Council and take full advantage of its many splendid services available to industrial members.

7. If you have not already done so, select the best man available to head your safety work under the superintendent. If you desire to bring in an outside man as safety supervisor, do not overlook the helpful service you can obtain from the men of the National Safety Council.

8. If you do not now have an active and efficient safety committee in your plant, organize one. You may start with a small group and add to it as may see wire. Appoint to, and continue on, the committee only active men.

9. Divide the general safety committee into task groups. As soon as one is well started, form another. Memberships on these groups may revolve as desirable. Safety committees often include such groups as the following:

Accident Investigation.
Plant Inspection.
Safety Rules and Enforcement.
First Aid and Relief.
Plant Housekeeping.
Safety Education.
Safety Campaigns.
Fire Protection.

10. See that, as nearly as possible, every employee in your organization has an active part in your safety activities.

11. Make a thorough study of the record of past accidents and near accidents suffered by your plant and, so far as possible, by others operating under similar circumstances. In formulating any adequate safety program such information is very valuable.

12. Develop a series of regular communications from the company chief executive that will indicate his interest in the safety of his men and his leadership in company safety matters.

13. Establish a foreman-training program that will cover the general principles of good foremanship as well as accident prevention. Many state universities include a department of industrial education which may be called on for advice.

14. Clean up the plant, then insist that it be kept in a clean and orderly condition. Good housekeeping is one of the most valuable allies in the fight against accidents. Clean and orderly wash- and change-rooms are most important.

15. Introduce an "I fixed it" campaign by which the men of the various departments can be interested in making minor repairs and replacements. When a man notices a small repair needed he obtains an "I fixed it" slip from his foreman, is given the necessary tools and materials at the stock room, and on completion turns in his slip. Prizes are awarded monthly for the winning repairs.

16. See that safety warning signs are placed where needed, that they are clean and otherwise readable, well made, and located to attract attention and that they are clear as to meaning and not ambiguous.

17. Seek to eliminate moving-machinery accidents. Start by listing and studying every job and operation in which an employee is required or may be tempted to touch moving parts. Reduce such cases to the absolute minimum. If possible, prohibit entirely the touching of, or working on, moving parts.

18. Make a careful study of the possibilities of accidents due to falls of men or objects. In and out of industry falls constitute one of the most prolific causes of accidents and this type of accident is among the most severe encountered. Safe floors, ramps, stairs and ladders, good lighting, effective guards and careful worker habits are among the most important preventives.

19. Check up on electrical hazards with particular attention to control apparatus, power and light lines, fixed and portable appliances. Faulty "grounds" are a frequent cause of personal injury.

20. If the plant equipment includes railroad or tramway haulage, pay particular attention to the avoidance of railroad accidents. The practice of passing under or between cars claims many victims. Stepping on the front of moving locomotives, getting under a locomotive without setting the brakes, and pinching the finger in braking, coupling or rock-dumping mechanisms are all sources of severe and fatal mishaps.

21. Make sure that the regulation requiring employees to report at once for first aid, even after a seemingly trivial scratch, or bruise, is scrupulously obeyed. Many deaths result from overlooking this precaution.

22. Investigate eye hazards and means of protection. Where and when goggles should be worn, as well as the types best suited to the conditions encountered, are points that must be determined. How to interest men in making the wearing of their goggles a habit is also an important matter.

23. What are the probabilities as to head accidents? Most quarrymen and miners as well as many other plant men should wear protection hats constantly or for certain kinds of work which they are called on to perform.

24. Are safety shoes being worn for work involving foot hazards? Sound feet are of very great importance to men who work in quarries, mines and mills. Safety shoes prevent the greater proportion of foot injuries to such men.

25. Dangerous clothing is worn by many workers. Careful check-ups should be made frequently to make sure that apparel hazards are not present among your employees.

A Guide for Selecting Ball-Bearing Lubricants

SECTION I. GREASES.

FULLY appreciating the many problems that are faced by ball-bearing users in obtaining suitable greases for relubricating ball-bearings, the Annual Bearing Engineers' Committee has been, over a period of several years, undertaking a research program from a chemical and mechanical standpoint to obtain a solution. For years there were many greases available, but these were chiefly of lime-soap bases which had limitations. Due to the troubles experienced by the ball-bearing industry, a cooperative effort was made, and, as a result, much better greases are now available.

The standards which follow have been developed from practical experience and careful analysis by the Annular Bearing Engineers' Committee, but it may become desirable to revise these occasionally to keep abreast of the continual development in the lubricant field. The user will understand that some lubricants which conform to these standards may not be suitable for all applications. It should also be appreciated that some greases which do not conform may sometimes be satisfactory. For all applications the user of the bearing is advised to obtain the approval of the grease manufacturers.

The A.B.E.C. has developed a grease-testing machine for determining the physical characteristics of greases and a number of the properties called for in these standards are determined with this machine.

A.B.E.C. GREASE STANDARD

A.B.E.C. I. (Type of grease recommended for speeds and temperatures as indicated in *Guide for Relubricating Ball-Bearings.*)

Greases shall be free from dirt, abrasive matter, fillers, excessive amounts of moisture and free acid or free alkali.

Nature of soap..... Soda or soda lime; maximum lime soap 5 per cent. of total weight of grease; uncombined lime 0.10 per cent. maximum.

Worked Penetration, A.S.T.M. 190 minutes

Running Torque, A.B.E.C. Test. 60-300 gm. per cm.

Leakage:

Through plate seal ..... 5 per cent. maximum.

Left in bearing..... 75 per cent. minimum

Oxidation ..... (See details below)

A.B.E.C. II. (General-purpose greases, suitable for grease-gun applications, for modern speeds and temperatures as indicated in *Guide for Relubricating Ball-Bearings.*)

Greases shall be free from dirt, abrasive matter, fillers, excessive amounts of moisture and free acid or free alkali.

Nature of soap..... Soda or soda lime; maximum lime soap 5 per cent. of total weight of grease; uncombined lime 0.10 per cent. maximum.

Worked Penetration, A.S.T.M. 260 minutes

Running Torque, A.B.E.C. Test. 60-450 gm. per cm.

Leakage:

Through plate seal..... 20 per cent. maximum

Left in bearing..... 75 per cent. minimum

Oxidation ..... (See details below)

Oxidation: Greases shall show no evidence of deterioration following 18 months' storage in bearings in individual sealed boxes or packages as indicated by oil leakage, hardening, as gum formation of the grease, or by loss of free turning by hand.

Alternatively, the grease shall show no change in consistency, drop point, or neutralization within the limits defined below*, nor more than 5 pounds drop in oxygen pressure following a 100-hour run in Norma-Hoffmann oxidation bomb at 210 degrees F. and 110 pounds initial oxygen pressure, using a 20-gram sample on standard glass sample dishes. When tested under the same conditions with the addition of a piece of sheet copper partially immersed in the sample, there shall be no evidence of stain or corrosion of the copper strip, nor any evidence of physical change in the grease after six hours of exposure.

*Consistency A.S.T.M. penetration or equivalent and drop point Shell Ubbelohde shall not increase or decrease more than 10 per cent.

*Neutralization numbers made on grease samples before and after 100-hour accelerated oxidation, or 18 months' storage test, must not show a total change of more than the equivalent of 10 mg. of KOH per gram of grease, nor shall the neutralization number following 100 hours' oxidation show acidity exceeding the equivalent of 5 mg. of KOH per gram of grease.

THE A.B.E.C. GREASE-TESTING MACHINE

Test Procedure

(1) Calcium-soap greases shall be tested with an oil-bath temperature maintained at 80-85 degrees F., and at 150 degrees F.

(2) Sodium-soap greases shall be tested with an oil-bath temperature maintained ta 80-85 degrees F., at 150 degrees F., and at 220 degrees F.

(3) The test bearing shall be a Conrad type, single-shielded, S.A.E. 204, assembled into the test fixture with the shield at the bottom. These bearings can be purchased from any of the ball-bearing manufacturers and should be specified for the ABEC machine.

(4) The bearing seal on the motor-shaft extension should be checked periodically with a dial indicator and adjusted if necessary, to run true within .0003 inch total indicator reading on the bearing seat and the shoulder in radial and axial directions, respectively.

(5) The bearings, which shall be furnished coated with a rust preventive, should be prepared for test by washing them in mineral spirits which conform with A.S.T.M. specification D-235-39, after which they should be dried out so that there is no condensate present. The bearing is to be packed with a quantity of grease equivalent to 60 per cent of the air-space volume of the test bearing, this grease to be put into the bearing so that it is level full with the top of the bearing. The bearing is then to be rotated by hand to distribute the grease over the contacting surfaces of the bearing.

(6) The test at each temperature shall be for 20 minutes duration.

(7) Tests shall be conducted with one sample and shall be checked between tests to determine the amount of leakage; after determining the perecentage of leakage, the grease which has been thrown out or leaked through shall be returned to the bearing for subsequent tests. All grease which leaks through the bearing shall be collected and weighed, and the amount of grease left in the bearing shall be determined by the difference in weight.

(8) Between successive runs, the temperature shall be raised at the rate of 10 to 12 degrees F., per minute with the bearing at rest.

(9) The torque shall be recorded at the end of 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 15, and 20 minutes.

(10) Observations of separation, change in structure, change in consistency, leakage, and aeration shall be made during the tests.

SECTION II. LUBRICATION OF ANTI-FRICTION BEARINGS WITH OIL

The friction torque in a ball-bearing lubricated with oil consists essentially of two components. One of these is a function of the bearing design and the load imposed on the bearing and the other is a function of the viscosity and quantity

GREASES FOR LUBLICATION OF BALL BEARINGS

Operating Temperature Range	Speed Factor (Bearing Bore in MM. x RPM of Shaft)			
	Up to 75,000	75,000 to 150,000	150,000 to 300,000	300,000 to 450,000
−50° F. to +125° F.	No recommendation	No recommendation	No recommendation	No recommendation
−10° F. to +125° F.	ABEC—II*	ABEC—I	ABEC—I	No recommendation
32° F. to 150° F.	ABEC—II	ABEC—I	ABEC—I	No recommendation
60° F. to 200° F.	ABEC—II	ABEC—I	No recommendation	No recommendation
OVER 200° F.	No recommendation	No recommendation	No recommendation	No recommendation

For excessive moisture conditions a water-repellent grease may be required.
*ABEC—I may be preferred for some applications.

of the oil and the speed of the bearing.

It has been found that the friction torque in a bearing is lowest with a very small quantity of oil, just sufficient to form a thin film over the contacting surfaces, and that the friction will increase with greater quantity and with higher viscosity of the oil. With more oil than just enough to make a film, the friction torque will also increase with the speed.

The energy loss in a bearing is proportional to the product of torque and speed, and this energy loss will be dissipated as heat and cause a rise in the temperature of the bearing and its housing. This temperature rise will be checked by radiation, convection and conduction of the heat generated to an extent depending up on the construction of the housing and the influence of the surrounding atmosphere. The rise in temperature, due to operation of the bearing, will result in a decrease in viscosity of the oil and, therefore, a decrease in friction torque compared with the friction of starting, but soon a balanced condition will be reached.

With so many factors influencing the friction torque, energy loss and temperature rise in a bearing lubricated with oil, it is evidently not possible to give definite recommendations for the selection of oil for all bearing applications, but two general considerations are dominant:

1. The desire to reduce friction to the minimum, which requires a small quantity of oil of low viscosity.

2. The desire to maintain lubrication safely without much regard for friction losses, which results in using larger quantities of oil and usually of somewhat greater viscosity in order to reduce losses from evaporation or leakeage.

This second condition is most frequently met and in view of the broad outline of lubrication with oil made above, the accompanying chart has been made up for the selection of viscosities of oil for various operating conditions.

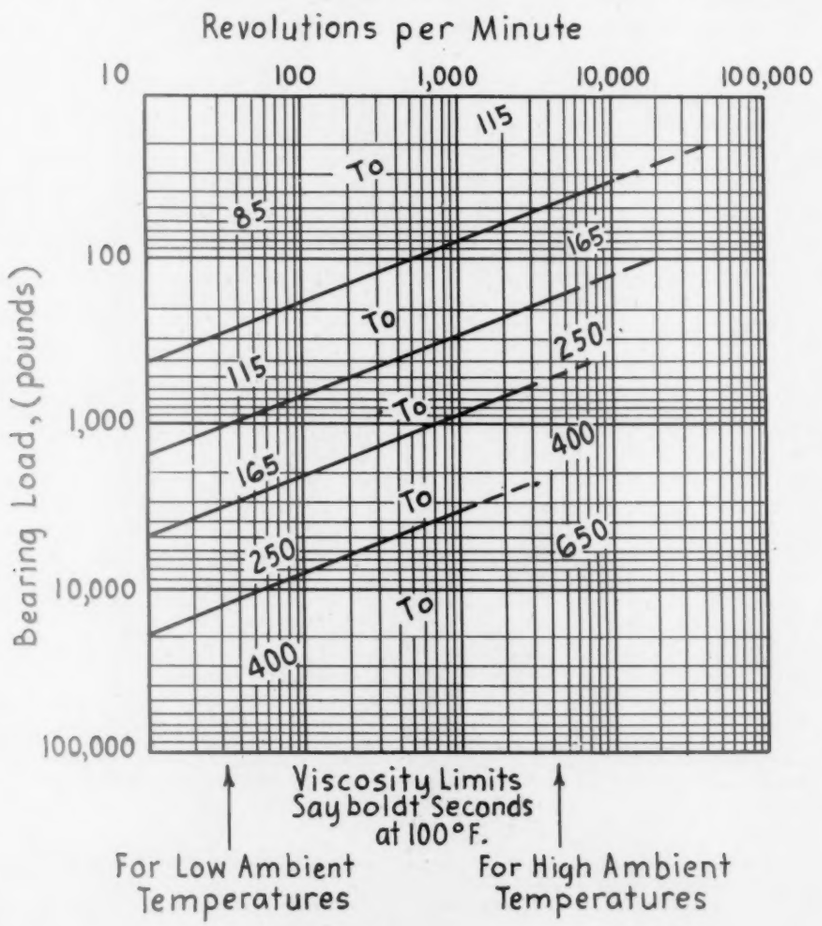
The operating speeds (r.p.m.) are given on one coördinate of the diagram and the bearing loads in pounds on the other, both to a logarithmic scale. The lines intersecting the coördinates indicate viscosity groups for oils that are preferred for these loads and speeds. When ambient temperatures are low the lower viscosity ranges should be used, and with high operating temperatures the higher viscosities should be selected.

When bearings must operate in a wide range of temperatures, an oil that has the least changes with change in temperature, *i.e.*, an oil with high viscosity index, should be selected.

In the great majority of applications pure mineral oils are most satisfactory, but they should, of course, be free from contamination that may cause wear in the bearing, and they should show high resistance to oxidation, to gumming and to deterioration by evaporation of light distillates and they must not cause corrosion of any parts of the bearing during standing or operation.

It is self-evident that for very low starting temperatures the oil selected must have a sufficiently low pour-point so that the bearing will not be locked by oil frozen solid.

In special applications various compounded oils may be preferred, and in such cases the recommendation of the lubricant manufacturer should be obtained.



Production of Kaolin Reaches Record Level

For three straight years production of a high-grade clay in the United States has made new records.

In 1941, sales of domestic kaolin or china clay jumped to 1,087,848 short tons valued at $9,205,892 compared with 833,450 tons valued at $6,994,106 in 1940, according to the Bureau of Mines, United States Department of the Interior. The tontage topped that of the previous year by 31 per cent. and was more than double that of 1929. The paper industry alone required 110,000 tons more than in 1940 and consumed 56 per cent. of the total shipments. The country needs more and more paper, larger proportions of clay are used in making high-grade paper, and domestic clay is being used instead of imported clay both as filler and coating. Percentagewise, the consumption of clay for refractories, pottery, rubber, paint, and certain minor uses increased even more than shipments of paper clay.

Articles of incorporation have been filed by the Koepke Sand & Gravel Company, Appleton, Wisconsin.

The firm is capitalized for $25,000 and the articles were signed by L. H. Koepke, G. A. Koepke and Ray Koepke.

PHELPS DODGE *INSTALLS MULTICLONES* AT MORENCI!

450,000 c.f.m. of converter gases at 500° F. will be handled by this MULTICLONE installation at Morenci.

MULTICLONE Collectors were chosen on the basis of their efficiency and economy as proved in the Phelps Dodge, Douglas Arizona plant.

MULTICLONE Collectors are compact and may be located in otherwise useless space. Being all metal they are fireproof. They handle hot gases and may be jacketed to conserve heat for use in the plant.

MULTICLONES can be provided for any capacity from a few c.f.m. to hundreds of thousands with collection efficiencies to meet specific requirements. Full information is available about test units for actual demonstration in your plant.

MULTICLONES *are prefabricated and assembled before shipment to facilitate installation.*

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1. *Efficiency. High for given dust concentration.*
2. *No Fire Hazard. All-metal construction permits the safe handling of gases at all practical operating temperatures.*
3. *Compactness. Fit into otherwise useless space.*
4. *Low Installation Cost. Erection can be made by ordinary plant labor.*
5. *Accessibility. Large access openings in the hopper for inspection and cleaning if necessary.*
6. *Economy. No moving parts to wear out. No filters or screens to be cleaned or replaced.*

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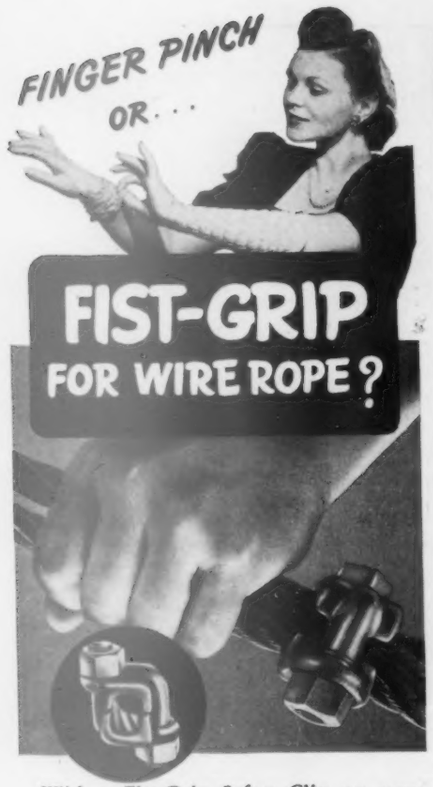

With a Fist-Grip Safety Clip on your wire rope, there is none of the rope-crimping U-Bolt finger-pinch to weaken the strands and pave the way for trouble.

Four flat bearing surfaces hold the rope in a drop-forged steel *fist,* delivering 95% of rope efficiency without crushing or distorting the rope.

Both halves of the Safety Clip are alike — an inexperienced or careless worker can't put it on wrong. No danger of going on backwards.

STEEL FOR GUNS — FROM SAFETY CLIPS!

For Safety Clips that match the holding power of a U-Bolt assembly, 25% *less steel* is needed. By using Safety Clips, that steel goes where it's needed most for this country's victory program. Another steel saving — there are no crushed, crimped ends of expensive wire rope to be cut off and wasted.

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No rope bowing or crimping	rope saved
No battered, bent threads	clips saved
No special wrench	tools saved
Bolts on opposite sides	tightening time saved
Can't go on wrong	accidents saved
Fewer clips needed	clips saved
Fewer rope breaks	accidents saved

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Look for Laughlin Products in Pit & Quarry Handbook

THE THOMAS LAUGHLIN COMPANY
PORTLAND, MAINE

PERSONAL MENTION

COLONEL HANFORD MACNIDER, president of the Northwestern States Portland Cement Company of Mason City, Iowa, now back in army duty, is reported to be serving in Australia. He is a former national commander of the American Legion.

E. C. KOERPER, manager of the United States Gypsum Company plant at Cordova, Illinois for the last five years, has been ordered to active duty with the materiel command at Wright Field, near Dayton, Ohio. He is a first lieutenant in the air corps reserves.

GAIL E. SPAIN, who has served as general sales manager, of the Caterpillar Tractor Company, has been elevated to a vice-presidency, succeeding the late D. G. SHERWIN, and will make his headquarters at the San Leandro, California office. JOHN Q. MCDONALD, who has been export sales manager, becomes general sales manager.

McClure Kelley

MCCLURE KELLEY, who began his association with the company in 1929 as assistant treasurer, becoming treasurer in 1931 and vice-president and treasurer in 1940, has been elected president of the Austin-Western Road Machinery Company of Aurora, Illinois. He will succeed SAMUEL F. BEATTY who will become chairman of the Executive Committee.

EDGAR L. SHANEBERGER, 70, who had been in the gravel business in Terre Haute and Montezuma, Indiana for the past 30 years, died recently after a brief illness. He was a graduate of Rose Polytechnic Institute in Terre Haute with the engineering class of 1895.

HANS G. JACOBSEN, 58, for 14 years affiliated with the valve-bag division of the St. Regis Paper Company, died April 28. His home was in Flossmoor, a Chicago suburb. He was well known to every cement-plant official in the country, both through his connection with St. Regis and his previous work with the Portland Cement Association where

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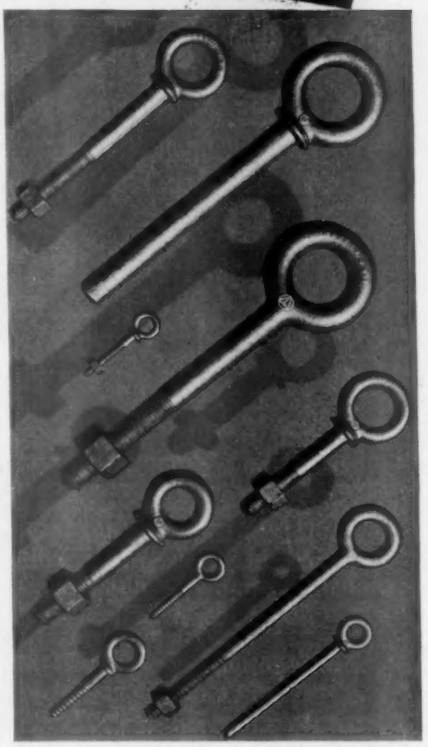

There's a standard Laughlin eye bolt for every requirement — no need to have special bolts made up. All weldless—all drop forged steel. Nut type with extra length threads available—for extra adjustment. Send for latest Laughlin catalog showing standard stock eye-bolt sizes.

Save money by ordering stock eye bolts — available in Nut, Screw and Rivet types.

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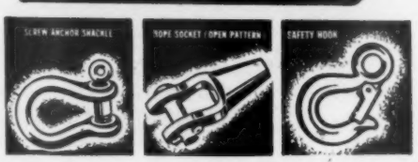
THE THOMAS LAUGHLIN COMPANY
PORTLAND, MAINE



he launched the industry's safety program nearly 20 years ago as secretary of the association's committee on accident prevention. He was a native of Denmark.

MILTON J. CARPENTER, 50, president of Carpenter Brothers, Inc., Milwaukee, foundry-sand and supplies firm, is dead. With his brother, Everett N., he organized the foundry-supply firm in 1917.

W. PIERCE PERCELL, 48, president of the Lake View Sand & Gravel Company, Fond du Lac, Wisconsin, died of a heart attack April 13 while driving his automobile. A native of Fond du Lac, Mr. Percell was a former president of the Fond du Lac Yacht Club.

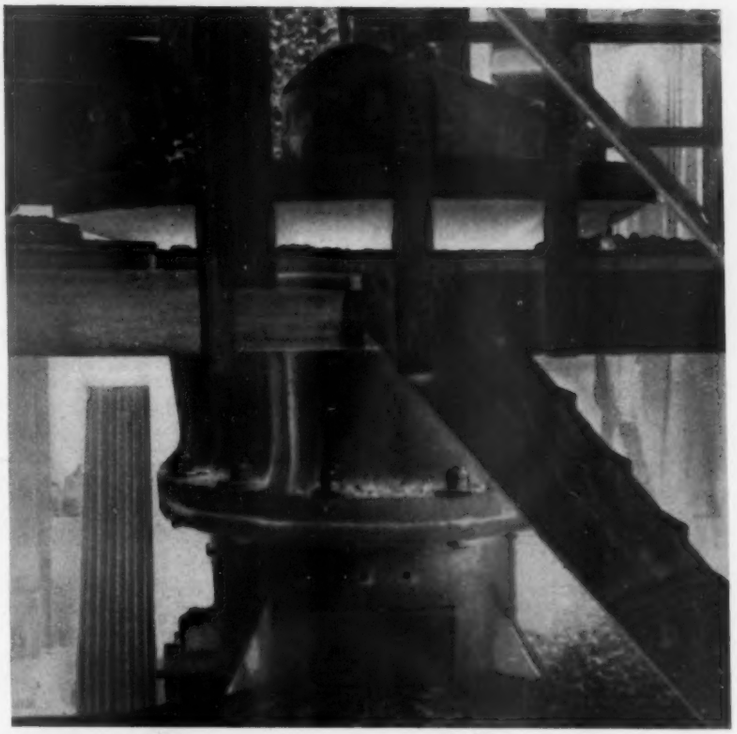
HARRIS JAMES GRAM, 55, vice-president of the Limestone Products Company, Menominee, Michigan, until his retirement several years ago, died April 8 at his home.

CHARLES L. IRELAND, 80, founder and chairman of the board of the Birmingham Slag Company, is dead. He served for many years as president of the company, of which he was chairman of the board of directors at the time of his death. Surviving are the widow, and two sons, C. Eugene Ireland, president, and C. Barney Ireland, vice-president of the Birmingham Slag Company.

ROBERT GILMORE, 63, general manager of the Wire Rope Division of the Jones & Laughlin Steel Corporation at Muncy, Pa., died May 14 after a heart attack. He had been associated with the wire rope industry for the past fifty years and started with Jones & Laughlin in July, 1938. He was a pioneer in the development of wire rope and was widely known throughout the industry.

ROBERT H. DOWNES, 63, secretary of the Cook & Brown Lime Company, Oshkosh, Wisconsin, died May 10 in an Oshkosh hospital after an illness of several weeks. He joined the Cook & Brown company in 1921. He was active in Oshkosh Chamber of Commerce work for years and served as its president in 1925. Survivors include his wife, a son, a daughter, and two sisters.

ROBERT F. VOGT, chief consulting engineer of the Allis-Chalmers Manufacturing Company since 1937 and an employe of the company for 36 years, died April 17 after a week's illness.



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HARRY W. LORESCH, 62, a pioneer in the concrete burial-vault industry, died recently at his home near Pittsburgh.

AARON T. BOWERS, 55, superintendent of the Ready Mixed Concrete & Supply Company of Nashville, Tennessee, passed away in April after an extended illness.

WILLIAM C. ZUMWINKEL, 86, former president of the St. Louis Lime & Cement Company died at his St. Louis home a short time ago. Two sons and a daughter survive him.

BURDETTE TOMLIN, 55, president of the New Jersey Silica Sand Company, near Millville, New Jersey, died May 3 of a heart attack at his home in Ocean City, New Jersey. With Clarence H. Wolf, retired principal of the Millville High School, he formed the sand company in 1921. The company since acquired hundreds of acres of deposits near Millville. Before entering the sand business, Mr. Tomlin was a retail clothing merchant in Millville.

THOMAS EDWARDS, 89, manager of the old Ashland Lime, Salt and Cement Company from 1888 until his retirement a few years ago, died a short time ago in Ashland, Wisconsin.

LABOR DECISIONS

Building Employees

Fleming, Administrator v. A. B. Kirschbaum Company, decided by the U. S. Circuit Court of Appeals, Third Circuit, December 17, 1941; reported at 124 Fed. (2d) 567.

This decision, affirming an earlier district court decision in the same case (38 Fed. Supp. 204), holds: (1) that employees engaged in interstate commerce or in the production of goods for interstate commerce are covered by the Fair Labor Standards Act regardless of whether the employer is himself engaged in interstate commerce; (2) that an engineer, fireman, elevator, operators, watchmen, carpenters and a porter employed by a corporation owning a building in which tenants manufacture goods for shipment in interstate commerce are employed in a process or occupation necessary to the production of goods for interstate commerce (within the meaning of "production" as defined in the act) and hence are covered by the act; and (3) that the rendering of some services, which is incidental to most businesses, does not of itself make the employer a "service establishment" entitled to exemption from the act.

Employee's Work

Fleming v. American Stores Company, decided by the U. S. District Court, Eastern District of Pennsylvania, December 30, 1941, reported at 42 Fed. Supp. 511.

A chain-store organization which directly and through wholly owned subsidiaries operates 2,300 retail grocery stores and 11 warehouses in seven states and the District of Columbia, along with food-processing and manufacturing plants, etc., is held not to be a "retail establishment" within the provisions of Section 13 (a) (2) of the Fair Labor Standards Act of 1938, and hence is subject to the provisions (wage and hour) of Sections 6 and 7 of the act. The corporation's contention that warehouses which service only stores in the state in which they are located are engaged in intrastate commerce, and therefore are not subject to the provisions of the act, is not sustained since coverage of Sections 6 and 7 is dependent upon the nature of the services performed by the employee and not upon the character of the employer's business.

Overtime Rate

Bumpus v. Continental Baking Company, decided by the U. S. Court of Appeals, Sixth Circuit, December 10, 1941; reported at 124 Fed. (2d) 549.

The complainant was employed at a rate in excess of the minimum wages set by Section 6 of the Fair Labor Standards Act, and in excess of such wages plus overtime payments if overtime were based on the minimum wage set by the act. The principal question, therefore, was whether an employee whose compensation equals or exceeds the applicable minimum rate for each of the applicable maximum hours permissible without increased compensation, and in addition exceeds one and one-half times the minimum rate for each hour over that maximum number, is entitled to additional compensation for overtime under Section 7. The correlative question was whether the words "regular rate at which he is employed" means the minimum rate prescribed by Section 6.

The court holds that "the unmistakable meaning of the language used is that employment for more than the statutory maximum number

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of hours is intended to entail additional expense to the employer no matter what the regular rate of employment may be unless the employee falls within one of the exempted groups there listed." The employee in this case is therefore entitled to receive overtime payments based on the regular rate at which he was employed (the weekly wage divided by the weekly number of hours), regardless of the fact that his contract entitled him to substantially more than the minimum wages set by Section 6.

Parties to Contracts

National Labor Relations Board v. Indiana & Michigan Electric Company, decided by the U. S. Circuit Court of Appeals, Sixth Circuit, December 12, 1941; reported at 124 Fed. (2d) 50.

From a review of the earlier controlling decisions of the Supreme Court, the court here concludes that the test to be applied to the question whether the parties to bargaining contracts are necessary parties to a proceeding under the National Labor Relations Act is: (1) If the facts show that the right asserted by the board is one arising solely out of the contract, the performance of which does not inherently result in a violation of the act, the beneficiaries of the contract or their representatives are necessary parties. (2) If the facts show that the contract is inherently unfair, or its performance will result in the continuance of unfair labor practices as defined in the act, the beneficiaries of the contract or their representatives are not necessary parties, but may be made parties to the proceedings in the discretion of the board. In this case the board found that the employer had caused an association of its employees to be organized and had dominated it in the performance of the bargaining contract. It therefore followed that the association was not a necessary party to the proceedings whereby the board sought enforcement of its cease-and-desist order.

Unpaid Overtime

Floyd v. Du Bois Soap Company, decided by the Ohio Court of Appeals, Hamilton County, September 15, 1941; reported at 38 N.E. (2d) 919.

This decision holds (1) that a suit for unpaid overtime, an additional amount as "liquidated damages" and attorney's fee, under the Fair Labor Standards Act, is not an

A speed-up tip to sand and gravel producers who use plain suction dredges

Are you operating a plain suction dredge that does not seem to deliver as much sand and gravel as it should? Your first thought might be that the dredging pump is at fault, and perhaps this may be the fact. The Morris engineers will be glad to check your operating conditions and give you authoritative advice on this point. However, here are two additional suggestions that may help.

If your deposit is compacted and will not cave readily, install a jet agitator at the suction intake supplied with water by a separate small centrifugal pump. In some cases, the installation of a jet agitator has increased output more than 100%.

If the material you handle includes a considerable proportion of heavy gravel, a cutter on the suction will provide greater regularity of feeding and prevent choking of the suction intake. Whatever your problem may be, the Morris engineers are prepared to give impartial advice based on more than 75 years of experience in the "hard to handle" centrifugal pump services.

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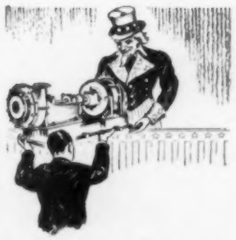

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CENTRIFUGAL PUMPS

action to enforce a "penalty," and that a state court has jurisdiction; and (2) that where an employee received a wage of $31 or $33 (at different times) per week of 78 hours, the "regular rate per hour" for purposes of computing unpaid overtime compensation under the Fair Labor Standards Act was properly determined by dividing the weekly wage by the number of hours worked. "In determining the regular rate per hour under an employment by the week," says the court, "we must consider that Congress has fixed the number of hours of work per week that is compatible with the general welfare. Work for a greater number of hours is incompatible with that general welfare and must be discouraged by requiring the employer to pay at the higher rate for all time in excess of the maximum. For this purpose Congress has defined the work-week and no private convention contrary thereto can have any validity. The employment by the week was legal, and the provision for weekly compensation was also legal, and in accordance with the declared policy of Congress, but the provision for 78 hours of work, at the same rate of pay, was not."

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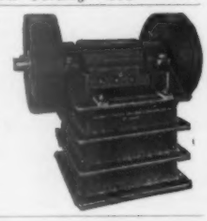

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Records of Overtime

Mortenson v. Western Light & Telephone Company, decided by the U. S. District Court, Southern District of Iowa, Western Division, November 10, 1941; reported at 42 Fed. Supp. 319.

A former manager of two small telephone plants, suing to recover unpaid overtime and additional amounts under the Fair Labor Standards Act, claimed that on instructions from his superiors he had submitted and signed records showing no overtime, but that records he kept secretly at home indicated the working of overtime on which the claim is based. The statement was categorically denied by the employer and, under the evidence, was so out of line with the probabilities that the judge gave it no credence. "A claim that a company through its officers made a secret agreement not to report overtime is a serious charge and one that should not be permitted to stand on a mere statement by an employee who after leaving such company's employment seeks overtime," says the judge in his written opinion. "While there is no doubt of the sound principle of the law that if an employer and employees agree that the wages to be paid were less than those permitted by the act, it would not be binding as against the employee as the act is for the general good of society and can not be defeated by private agreements; yet no court has held, and I do not believe any court will hold, that an employee can, without permission or knowledge of his employer, make incorrect reports as to his daily services and permit the employer to act as though such reports were honestly made and thereafter take advantage of this situation and claim that the false reports so made can be corrected. All the elements of an estoppal are present in this case."

Interstate Commerce

Wilson & Company v. National Labor Relations Board, decided by the U. S. Circuit Court of Appeals, Seventh Circuit, November 17, 1941, rehearing denied December 17, 1941; reported at 124 Fed. (2d) 845.

It was contended in this case that the National Labor Relations Act did not apply because the products involved had "ceased to flow in interstate commerce." The court rules, however, that the fact that the commerce to be protected has come to rest in one state is immaterial. "If the obstructions incident to it result in an interrupttion of the free flow of interstate commerce, Congress has the power to regulate it."

It is also held that it was within the power of the National Labor Relations Board to conclude from the evidence in the case that the employer's failure to reinstate certain men was motivated by a purpose to penalize them for engaging in legitimate concerted activities and therefore was discriminatory within the meaning of the act, and the board's cease-and-desist order will be enforced.

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Worker "On Call"

Super-Cold Southwest Company v. McBride, decided by the U. S. Circuit Court of Appeals, Fifth Circuit, December 1, 1941; reported at 124 Fed. (2d) 90.

An award under the Fair Labor Standards Act of 1938 for unpaid overtime compensation is reversed and remanded on the grounds: (1) that the proof did not show what part of the overtime work claimed was in interstate and what part in intrastate commerce, and (2) that the proof did not show the amount of time actually worked, as distin-

guished from time during which the employee was "on call". "Putting aside the unreasonableness of the claim that because he was 'on call' on Sunday he was 'at work' for 12 hours, we think it clear," says the court, "that the mere statement that he was 'on call' without more, in the face of the record which shows that a person 'on call' merely had to leave his telephone number of place where he could be found, is not proof that he was engaged in work either regular or overtime within the meaning of the Fair Labor Standards Act."

Class Action

Hunt v. National Linen Service Corporation, decided by the Supreme Court of Tennessee, November 29, 1941; reported at 157 S.W. (2d) 608.

The defendant employer demurred to the declaration in this suit, which was brought to recover back wages under the Fair Labor Standards Act, on the ground (among others) that the plaintiff was without right to maintain the action on behalf of "other employees similarly situated". The court holds, however, that "it would appear from the plain language of the act that, as in a general creditor's bill, this action may be begun by and for one employee generally, but may include within its scope a claim for all other employees similarly situated. This would not necessarily mean that these other employees were parties to the litigation. They are free to join in it or not, as they see fit. The purpose of Congress in providing this method of procedure is obviously to attempt to avoid a multiplicity of suits."

This suit, nevertheless, was dismissed because the declaration showed on its face that the employer, a linen-supply service, some of whose customers are engaged in interstate commerce, is operating a "service establishment, the greater part of whose servicing is in intrastate commerce," which is exempted from the scope of the Act.

TRADE NOTES

Patents on the well-known Sobek kiln have been purchased outright by the Lime & Hydrate Plants Company. This concern and its affiliate, the McGann Company, are manufacturing the kiln and marketing it under the trade name Sobek-Kuntz.

The San Francisco branch of the Allis-Chalmers Manufacturing Company is now located in a new combined office-warehouse building at 650 Harrison Street. F. C. Angle continues in charge in that area.

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Genuine 13% manganese steel, "the toughest steel known," effects a double saving in the severest crushing, grinding and pulverizing operations.

First, it reduces out-of-service time of the equipment, helping to maintain continuous production with consequent reduction in overhead and maintenance man-hours. Second, it cuts to a minimum the cost of wearing-part metal per ton of material produced.

The reasons? Where jaws, mantles, rolls, liners or hammers made of ordinary steel either break or wear out quickly, manganese steel absorbs the heavy shock stresses, while its work-hardening property produces a hard surface that is continuously renewed, without lessening the original toughness of the interior of the casting.

The parts that actually fracture or pulverize the refractory stone, ore or other material handled by jaw, gyratory or roll crushers, grinding mills or pulverizers, take the brunt of the impact and wear. Economical and uninterrupted production demands the strongest, most ductile and most abrasion resistant metal obtainable. So far no commercially produced iron or steel has shown, in the most abusive crushing operations, the uniform durability and economy of genuine 13% manganese steel.

In ordinary times the true economy of manganese steel wearing parts, as shown in continuous operation of equipment and low metal cost per ton of material, makes it indispensable to the shrewd informed operator. In these dangerous war times, when lost production and wasted man-hours cannot be tolerated, "The Toughest Steel Known" is a "must."

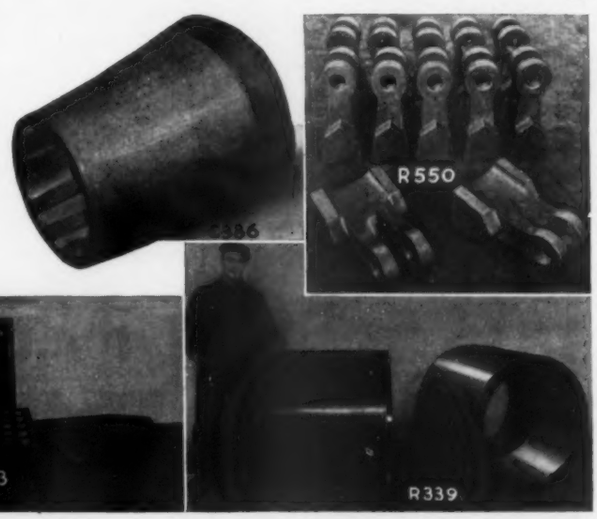
The maker of your machine will supply you with accurately fitting parts made of the best of manganese steel if you will specify "Amsco" in your A-priority order.

C-386—Gyratory Crusher Mantle

R-550—Typical manganese steel pulverizer hammers

R-413—Crusher jaws and side plates

R-339—Double-taper bore Manganese Steel Roll Shell



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OCCUPATIONAL DISEASES and the LAW

General Negligence

Grutzius v. Armour & Company of Delaware, Inc., decided by the Appellate Court of Illinois, First District, Second Division, December 30, 1941, rehearing denied January 20, 1942; reported at 38 N.E. (2d) 773.

The complaint in this case alleged that the plaintiff had been employed in the defendant's fertilizer plant, and that while so engaged he had been exposed to the inhalation of deleterious gases, dusts and fumes, and had become disabled from silicosis, pneumoconiosis and tuberculosis; that since November 1, 1936, the effective date of the Illinois Workmen's Occupational Diseases Act, the employer had had a statutory duty to use due and reasonable care for the safety of the health of its employees, but had negligently failed to prevent the appearance and diffusion of noxious gases, fumes and dust and to provide adequate ventilation and other mechanical devices for exhausting those substances; and that the employer had not availed itself of the compensation provisions of the statute.

In the trial court the complaint was dismissed and judgment entered for the defendant employer, and when that judgment was appealed directly to the Illinois Supreme Court that court transferred the case to the Appellate Court on the ground that no constitutional question was reasonably involved (377 Ill. 447, 36 N.E. (2d) 707).

Section 3 of the Occupational Diseases Act provides that where an employee sustains injury to health in the course of the employment and proximately caused by the negligence of the employer, a right of action shall accrue to the employee, "provided, that violation by any employer of any effective rule or rules made by the Industrial Commission pursuant to the Health and Safety Act, enacted by the Fifty-ninth General Assembly at the third special session, or violation by the employer of any statute of this state, intended for the protection of the health of employees, shall be and constitute negligence of the employer within the meaning of this section."

In this case no violation of statute or regulations within the proviso was alleged, and the essential controversy was whether Section 3 gives an employee a right of action for damages for an employer's negligence generally, or whether the right of action must be based on the "specific negligence" covered by the proviso. The court holds that "actionable negligence under this section is clearly defined and the proviso excludes any action by an employee for an employer's negligence except as defined." And, "since employees have no right under the common law to recover damages resulting from occupational diseases contracted by them in the course of their employment," and since, in the court's opinion, "the Legislature did not intend to afford employees a right of action against their employers for general negligence under the Workmen's Occupational Diseases Act and the Health and Safety Act," the court holds that the plaintiff's complaint was properly dismissed, and the judgment for the employer is affirmed.

Amendment to Law

Weil v. Taxicabs of Cincinnati, Inc., decided by the Supreme Court of Ohio, January 21, 1942; reported at 39 N.E. (2d) 148.

Two sections of the Ohio Workmen's Compensation Act (Sections 1465-68a and 1465-70 of the Ohio General Code) were amended, effective May 26, 1939, making (for the first time) all occupational diseases compensable. Section 1465-68a, as amended, provided, among other things, that the dependent of an employee whose death is caused by an occupational disease, shall on and after July 1, 1921, be entitled to compensation. This suit was for damages (at common law) for the death of a workman from carbon-monoxide poisoning. The disease was contracted on November 26, 1938; death occurred on February 8, 1939; the amended sections making all occupational diseases compensable became effective on May 26, 1939; and the petition in this suit was filed on October 25, 1939. The essential controversy was whether a common-law right of action against the employer on account of the contraction of the disease as a result of his negligence had been taken away by the amendments to the Compensation Act.

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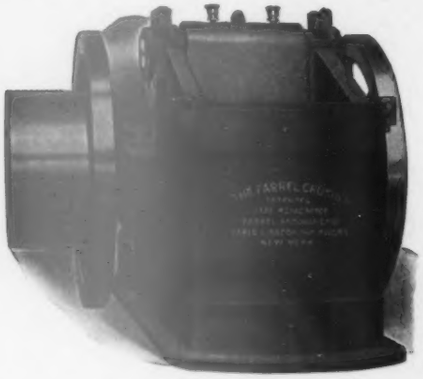
Complete plants designed and equipped, including Screens, Elevators and Conveyors. Machinery for Mines and Rock Quarries, Sand and Gravel Plants. Engineering Service.



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17 John St. New York, N. Y.

THE Leahy HEAVY DUTY No-Blind VIBRATING SCREEN with TRI-VIBE —for Fine Mesh Screening

GREATER CAPACITY AT LESS COST
Leahy Screens are designed to do maximum work at minimum cost—operate at full capacity at only ½ HP — annual maintenance cost guaranteed less than 1% of original purchase price.
Write for Bulletin No. 14 H

THE DEISTER CONCENTRATOR COMPANY
The Original Deister Co., Est. 1906
915 GLASGOW AVE. FORT WAYNE, IND.

The court holds that the date of July 1, 1921, reappearing in the amended Section 1465-68a, was simply a continuation of the law that had been in force theretofore, and neither created a right of compensation for carbon-monoxide poisoning occurring before the amendment in 1939, nor took away the common-law right of action (if filed not later than November 26, 1939) which existed before that time.

Negligence of Employer

Galeota v. United States Gypsum Company, decided by the U. S. Circuit Court of Appeals, Second Circuit, December 8, 1941; reported at 123 Fed. (2d) 947.

The plaintiff, an employee of the defendant company, brought this action to recover damages for injuries he claimed to have suffered because the defendant neglected to provide him with a safe place to work, or to furnish him with devices that would prevent him from inhaling particles of silica from which he contracted silicosis. He sought to recover for negligence of the defendant in failing to observe its common-law obligations and also in failing to observe certain provisions of the Labor Law of New York State. Section 200 of the Labor Law imposes a general duty to protect the health and safety of employees: Section 417 requires ventilation to insure the safety of employees; Rule 557 of State Industrial Bulletin No. 12 requires the provision of means for removing silica dust at the point of origin or preventing it from being disseminated in the air breathed by employees "in so far as it is practicable to do so." The plaintiff received a judgment for $8,305.08. The court in this appeal holds that there was testimony from which the jury might lawfully find that the plaintiff contracted silicosis and that the disease was due to the defendant's negligence during the six months involved, so that the judgment should be affirmed.

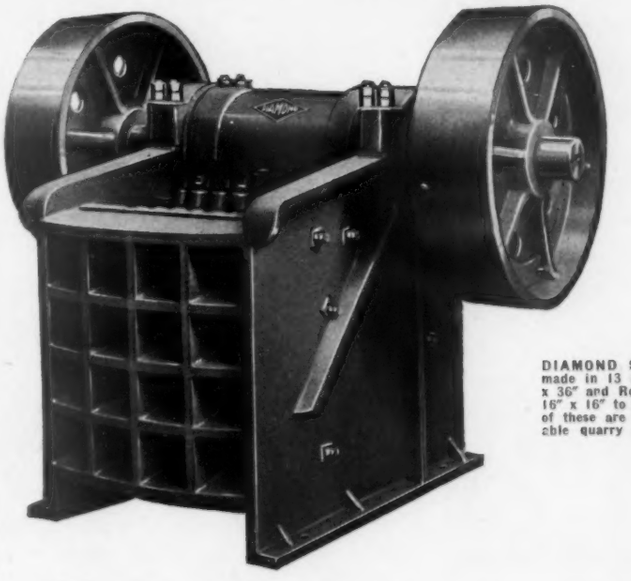
The testimony, says the court, "was, we think, sufficient to go to the jury and to justify the verdict for the plaintiff however we might have resolved the issues were we the fact finding body. There was proof that he was drilling in formations which contained substantial amounts of silica from which dust was created and not carried off, and there was also proof that a disease resulted having all the characteristics of silicosis. This was enough for submission to a jury of the cause of the disease. Its verdict concludes thus.

"The defendant contends that the plaintiff was barred from recovery by his own contributory negligence and by his assumption of risks inherent in his employment. There was nothing to show that the defendant instructed this employee that inhaling the dust would result in serious danger to him. That was its duty to a day laborer of no apparent education. . . . According to the plaintiff's witnesses there likewise was no showing that the defendant furnished him with proper appliances to avoid exposure to silica dust or with a safe place to work. Neglect to perform these obligations precluded it from successfully maintaining the defense of assumption of risk. . . . Whether the plaintiff was guilty of contributory negligence in continuing to work after the dust had once made him sick was a question for the jury. . . . The plaintiff denied that he knew that the dust was dangerous or that his disabilities were due to inhaling it."

Allergy

Kroger Grocery & Baking Company v. Industrial Commission et al., decided by the Supreme Court of

When You Buy a Crusher What Should You REALLY Buy?



DIAMOND Standard Jaw Crushers are made in 13 sizes from 6" x 12" to 24" x 36" and Roll Crushers in 6 sizes from 16" x 16" to 54" x 24", and various sizes of these are used in stationary or portable quarry plants and crushing units.

THESE are the things you should look for and **expect** in the crusher you buy:

1. A base heavy, rugged and properly reinforced to withstand the hardest crushing operations.
2. Pitman and plates (or rolls) carefully made of suitably hard material to give long and satisfactory use.
3. Proper **balance** for easiest running and consequent economy of power.
4. Delivery of **full** capacity.
5. Construction primarily based on the hardest type of crushing.

Don't buy on claims unless those claims can be thoroughly backed by performance records. And speaking of records, DIAMOND has some recent and very outstanding ones we're anxious to talk about. Either we, or any of our dealers will tell you all about it. In fact, we'd like to consult with you on **any** crushing, screening, conveying or elevating problem you have.

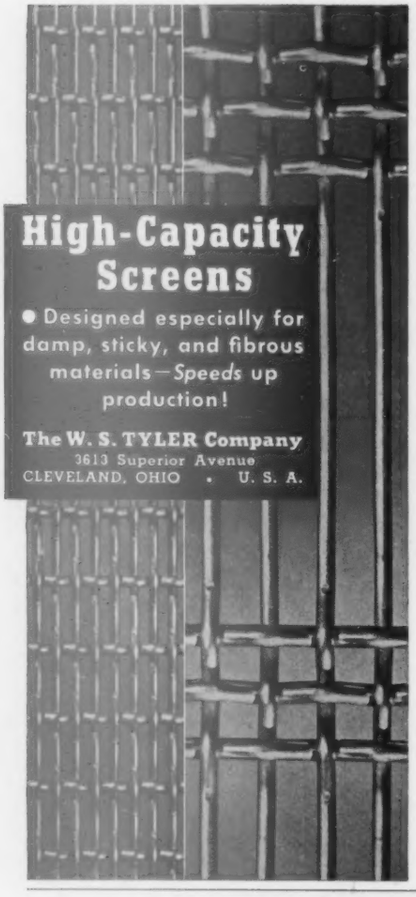
WRITE US or contact our nearest dealer for full details of DIAMOND ROCK, SAND AND GRAVEL EQUIPMENT. Free bulletins on request.

DIAMOND IRON WORKS, INC.

Wisconsin, January 13, 1942; reported at 1 N.W. (2d) 802.

The question involved in this case was whether dermatitis may be considered as an occupational disease under the Wisconsin Workmen's Compensation Act when an employee uses a cleaning compound in his work, he is allergic to that compound, and its use causes the dermatitis. The employer urged that a dermatitis caused by allergy is not an occupational disease "unless that disease is one acquired by such a percentage of persons as the result of and as an incident of working in an industry over a period of time, as to lead to the conclusion that such disease is the expectable result of conditions inherent in the occupation" and that the law was not intended to cover every allergic tendency of certain sensitized individuals to certain substances.

The court holds, however, that the Compensation Act merely provides for compensation for "injuries" caused by "accident or disease" that "arises out of his [the workman's] employment" (Sections 102.01(2) and 102.03(1)(e), and that "under this language any disease that is caused by an employee's work becomes compensable. The propositions run counter to the established rule 'that the fact that there was a preexisting physical condition without which there would not have been serious injury is immaterial.'" An allergic condition was also involved in *Creamery Package Manufacturing Company v. Industrial Commission,* 234 Wis. 683, 291 N.W. 299, where the workman was found to be afflicted with bronchial asthma caused by being subjected in his work to substances to which he was allergic, and an award was sustained. The award of compensation in this case is affirmed.


High-Capacity Screens
• Designed especially for damp, sticky, and fibrous materials—Speeds up production!
The W. S. TYLER Company
3613 Superior Avenue
CLEVELAND, OHIO • U. S. A.

TRAFFIC News Digest

I. C. C. Reports

Sand and Gravel.—Fourth-section application No. 18838. Sand and gravel from South Beloit, Illinois. By division 2. Authority granted by F.S.O. 14609, on conditions, to establish and maintain rates by the net ton on sand and gravel from Beloit of not less than 90 cents to Camp Douglas, Wisconsin, and 83 cents to Oshkosh, Wisconsin, as to which temporary relief was given by F.S.O. 14152, without observing the long-and-short-haul part of the fourth section.

Lime.—Fourth-section application No. 19158. Lime to Texas. By division 2. Authority granted by F.S.O. 12445, on conditions, to establish and maintain rates based on a minimum of 24,000 pounds instead of 30,000 pounds now authorized. Rates to be on calcium lime, common lime, including magnesium lime, hydrated, quick or slacked, from points in Arkansas, Illinois, Kansas, Louisiana, Missouri, and Oklahoma to points in Texas, without observing the long-and-short-haul part of the fourth section. The reduced minimum is to correspond with that authorized by the Texas commission on intrastate rates.

Crushed Stone. — Fourth-section application No. 18796. Crushed stone from Lassiter, North Carolina. By division 2. Authority granted by F.S.O. 14602, on conditions to establish and maintain a rate of not less than 95 cents a net ton on crushed stone, from Lassiter, North Carolina, to Newport News, Norfolk, Pinners Point, and Portsmouth, Viriginia, as to which temporary relief was given by F.S.O. 14060, without observing the long-and-short-haul part of the fourth section.

Clay.—The Commission, by an order in I. and S. No. 5116, Clay, Ex Parte 148 Increases, has suspended from April 18 until November 18, the operation of certain schedules as set forth in supplement No. 4 to Alternate Agent C. A. Spaninger's joint tariff, I.C.C. No. 765. These schedules proposed to increase the amount of the Ex Parte 148 increase on clay, crushed, ground or pulverized, from 3 to 6 per cent. It said it appeared that the public's rights and interests were injuriously affected by the proposed increases. The proceedings were to be heard by Examiner Konigsberg at the St. George Hotel, Brooklyn, N. Y., on May 13.

Stone.—The Commission, by division 2, in a supplemental report in fourth section application No. 18326, stone from Elberton, Georgia, group to Kansas and Missouri, has modified relief formerly granted with respect to rates to intermediate points. The applicants, in the prior report 243 I. C. C. 761, were authorized to establish and maintain on granite, marble or stone, minimum weight 40,000 pounds, rates from Elberton, Georgia, and other points of origin in Alabama and Georgia and from specified intermediate points to Kan-

PULVERIZE LIMESTONE *Economically*
with the NEW HOLLAND Model 20

• The high efficiency and modern engineering of the New Holland Model 20 means increased production and lower operating costs. Features include Adjustable Hammers, Adjustable Breaker Plate, Ball Bearing Shaft, new design Tramp Iron Pocket, and Boiler Plate Steel Construction.

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NEW HOLLAND (NH) MACHINE CO.
NEW HOLLAND, PENNSYLVANIA

sas City, Missouri—Kansas, and other named Missouri River cities not less than $7.53. Also rates to intermediate points the same as to Kansas City or related thereto as required by conditions of the order, to Carthage, Missouri, and Fort Scott, Kansas, rates the same as those concurrently maintained over direct routes but not less than $7.93 and to maintain higher rates to intermediate points. Modification was asked for by the railroads so as to provide a basis of rates over both direct and circuitous routes with a commodity rate to Kansas City of $7.53 as the maximum from all the origins to the intermediate points, and specific rates to a large number of points.

As modified the applicants are authorized to establish over existing routes specified articles of granite, marble or stone, from Elberton and other points of origin to Missouri River territory and to maintain higher rates to intermediate points. This authority is subject to the provision that rates to the higher rated intermediate points shall not be increased without authority from the Commission and shall not exceed rates constructed on specified bases.

CENTRAL FREIGHT ASSOCIATION

Docket 70404 (Shipper's proposal). Industrial sand as per usual descriptions. Establish on, from Conneaut group to Whitehall-Montague, Michigan, (A) $2.97, (B) $3.27, (C) $2.97 per net ton. Subject to Ex Parte 148 increase.

Docket 70420 (Shipper's proposal). Limestone, agricultural, unburnt, carload minimum weight 50,000 pounds. Establish a rate of $1.65 per net ton from Gibsonburg and Woodville, Ohio to Carlisle, Franklin, and West Unity, Ohio *via* P. R. R.—Tiffin—Big Four—C. N. and *via* P. R. R.—Van Wert—C. N.

Docket 70442 (Shipper's proposal). Sand, all kinds, and gravel, in open top cars. Carload. Establish a rate of $1.16 per net ton from Rittenours, Ohio to Philo (Duncan Falls), Ohio.

Docket 70483 (Shipper's proposal). Concrete mix, consisting of cement and fine aggregate, or of cement and fine or coarse aggregate, dry, and paper sacks. Carload. Minimum weight 50,000 pounds. Establish a rate of 16 per cent. of first class from points in C. F. A. territory to points in W. T. L. and S. W. F. B. territories.

Docket 70538 (Shipper's proposal). Limestone, ground or pulverized, unburnt, carload, minimum weight 60,000 pounds. Establish a rate of $2.59 per net ton from Greencastle, Indiana to Mt. Clemens, Mich. A rate of $2.70 per net ton from Bloomington, Indiana to Mt. Clemens. These rates subject to Ex Parte 148 increase.

Docket 70564 (Shipper's proposal). Sand, all kinds, and gravel in open top cars, carload. Establish a rate of 44 cents per net ton from Madison to Ashtabula, Ohio, *via* N. Y. C. (W) direct. Subject to Ex Parte 148 increase of 3 per cent.

Docket 70614 (Shipper's proposal). Crushed stone, and crushed stone screenings in bulk, in open-top cars. Carload. Establish a rate of $1.38 per net ton from Kenton, Ohio to Guysville, Ohio. *Via* N. Y. C. (W)—Grovenor, Ohio—B. & O. Subject to Ex Parte 148 increase of 3 per cent.

NEW MACHINERY and SUPPLIES

● Aggregate Treatment

A solution known as "Roctreet" for treating stone, gravel, slag or sand to obtain perfect adhesion of bituminous materials in road and street construction or maintenance is being marketed by the Roctreet Company, 1330 Second Avenue, New York.

The material is made up by dissolving 10 pounds in 90 pounds of hot water and is mixed with the aggregate being used. Occasionally, highly hydrophilic aggregates will require a slightly richer mixture, about 15 pounds to 85 pounds of water. Five minutes after treatment no amount of water will wash it off, it will stock-pile forever and the bitumen will adhere perfectly at any climatic temperature when applied at application temperature, the maker declares. No oil or liquefier is used which might change the character of the bitumen nor is the aggregate discolored.

For plant mixing, the solution may be put into the mixer before the bitumen is added. For road-mix or penetration work the solution is applied with a power distributor before the bitumen is applied.

● V-Belt

Following years of field testing, the Goodyear Tire & Rubber Company recently changed its multiple V-belt line to take full advantage of the wide scope of research work and available data from the compounding department of the company's tire division.

Sheathed with a new, tougher, black cover that insures longer wear, more uniform pull and higher resistance to heat, oil and other enemies of long belt life, the new product takes advantage of the fact that the toughest, longest-wearing compounds have always been black in color because of the use of black carbon stocks, whose inherent qualities have

Prevent **BURN-OUTS** *at both* **KILN-ENDS**

The use of PYRASTEEL Kiln Ends is not by any means confined to the *discharge end.*

Such high temperatures are frequently encountered at the *feed end* of the kiln, as to make the use of

PYRASTEEL SEGMENTS

the most practical method of preventing *burnouts* and interrupted operations.

There are many PYRASTEEL installations on the *feed end* and on the *discharge end* of rotary kilns . . . also where both the feed and discharge ends are provided with PYRASTEEL Segments. All are giving satisfactory results.

Write for Bulletin on this Heat-Resisting Alloy

CHICAGO STEEL FOUNDRY COMPANY

KEDZIE AVE & 37TH ST CHICAGO

Makers of Alloy Steel for 30 Years

PYRASTEEL for high temperatures

EVANSTEEL for strength

For twenty-five years Schaffer Poidometers have all been built with that hidden ingredient—QUALITY. They are all sturdy, reliable and long-lasting. For proportioning raw and finished materials, it will pay you to install Schaffer Poidometers.

GOOD EQUIPMENT DESERVES GOOD CARE

To the vast number of Poidometer users we bring this message: It will more than pay you to keep your machines up to the pink of condition. Check every part of your Schaffer Poidometer. Any part that shows wear or needs replacing should be ordered now. Your Poidometer will serve you best if you keep it in top condition.

Write for Catalog No. 5

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2828 Smallman St., PITTSBURGH, PA.

Need Help, Equipment, A Complete Used Plant?

Thousands of equipment items and services are offered in the Broadcast Section of Pit and Quarry each month. You can probably find just what you are looking for by reading the ads carefully. But, should you fail, a small "wanted" advertisement, costing as little as $5, may do the trick. Bring your problem to us — write the ad yourself, or tell me in your own way in a letter just what you want, and I'll prepare the copy for you.

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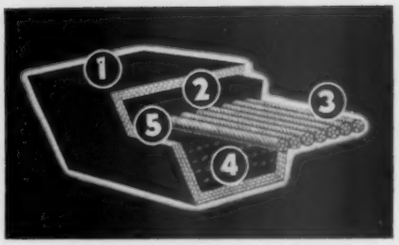


Section of the new belt.

made them most desirable to the compounders.

More uniform pull and better balanced performance results from the fact that it is possible to build this new black cover with more consistent coefficient of friction, essential to a balanced drive.

In addition, Goodyear "compass"-cord construction concentrates the load-carrying cords in the neutral axis where all pull evenly, without uneven stresses—thus enabling the belt to deliver higher efficiency on multiple-V drives.

This new, black, E-C Cord Multi-V belt is made in all standard cross-sections and lengths and is sold in sets, precision mafched under operating tensions. Reference to the illustration shows:

1. The heavy, super-touch black cover; 2. tension section; 3. neutral plane with heavy endless load-carrying compass cords; 4. compression section; 5. insulating gum.

● Substation

New standardized load-center unit substations are now available in sizes ranging from 100 to 2000 kva, according to an announcement by the Allis-Chalmers Mfg. Company, Milwaukee, Wisconsin. These compact, coördinated, factory-built units can be installed anywhere in industrial plants or power distribution centers, saving valuable headroom, floor space and long secondary runs of heavy copper.

Extremely flexible, the standard unit substations offer a wide choice of incoming- and outgoing-line arrangements.

● V-Belt

Built up from fabric, fiber strands and rubber, Cable-Core V-belts made by the Medart Company, St. Louis, will run in either direction with slack on either top or bottom. The center line of the drive may be horizontal, vertical or inclined at any angle.

The outer jacket is made of flexible fabric filled with live rubber. The core is composed of fiber stands, woven and prestretched, and then impregnated and embedded in slow-ageing rubber compound. The stretch-taking section above the core is made of special extensible rubber compounds. The compression section below the core is constructed to resist crimpage when belts are flexed around pulleys.

To standardize and simplify its scraper line, R. G. LeTourneau, Inc., announces the Model D Carryall which will replace former models X and Z. The improved and newly designed small scraper has a struck capacity of 3.5 cubic yards. The Model D incorporates the same features of design and operation that are standard on all larger models.

Trade Literature

More Drilling Profit with Howell All Steel Well Drilling Machines. 24 pages. R. R. Howell & Company, Minneapolis.

Schramm Stationary Air Compressors. (Catalog 42-S), 12 pages. Schramm, Inc., West Chester, Pennsylvania.

Stran-Steel on the Job. 24 pages. Great Lakes Steel Corporation, Detroit.

M.S.A. Safety Equipment. (Bulletin G-5), 8 pages. Mine Safety Appliances Company, Pittsburgh.

Raymond Pulverizing and Separating Equipment. (Bulletin 52), 8 pages. Raymond Pulverizer Division, Combustion Engineering Company, Chicago.

Hoists and Dump Bodies for 1½ and 2 Ton Chassis. 8 pages. Anthony Company, Inc., Streator, Illinois.

Model HC-70 Truck Mounted Crane. (Bulletin 1928), 6 pages. Link-Belt Speeder Corporation, Chicago.

Speeding Mining Operations with LeTourneau Equipment. (Bulletin A-282), 12 pages. R. G. LeTourneau, Inc., Peoria, Illinois.

The Denver Hydroclassifier. (Bulletin C4-AB), 8 pages. Denver Equipment Company, Denver.

Morse Reconditioned Machinery. (Stock List 421), 32 pages. Morse Brothers Machinery Company, Denver.

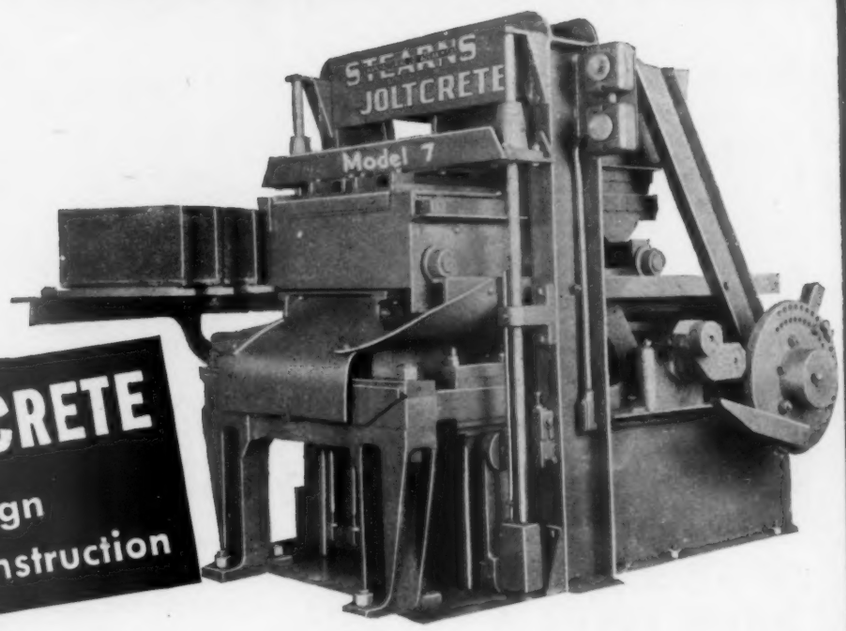
Dempster Dumpster Cuts Handling Costs. (Catalog 2-42), 72 pages. Dempster Brothers, Inc., Knoxville, Tennessee.

Climax of the Navy "E" Day celebration at the Broderick & Bascom Rope Company, St. Louis, was the presentation and unfurling of the all-navy burgee, with its "E" and anchor. Above (left to right), Captain Edwin A. Wolleson, U.S.N. (retired), who made the presentation; Lloyd C. Stark, former governor of Missouri, William Dee Becker, mayor of St. Louis, Charles E. Bascom, secretary-treasurer, and John K. Broderick, president of the company, are shown displaying the emblem.

June, 1942

The CONCRETE MANUFACTURER

A Special Section of ...



STEARNS JOLTCRETE

Simple in Design
Rugged in Construction

STEARNS JOLTCRETE is *simple in design.* That means easy operation, low maintenance costs. The No. 9 weighs about 4 tons, the No. 7 about 3½ tons. No awkward gadgets, no complicated mechanisms.

It's *rugged in construction*—it has weight where weight is needed. Special alloys are used for parts subjected to unusual wear.

Simple, rugged and *low in first cost.* That combination means low overhead cost, low operating costs.

LOWER MACHINE COST MEANS LOWER BLOCK COST

The initial investment for a Stearns Joltcrete Block Machine is often as little as half the price asked for other equipment of comparable capacity. The lower overhead represents an *extra* saving on every block made. Write us today for complete price information.

For complete details of this pioneer vibration block machine, ask for Stearns Joltcrete Folder.

STEARNS
MANUFACTURING CO. - ADRIAN, MICH.
GENE OLSEN, PRESIDENT

Complete Concrete Products Plant Equipment — Power and Hand Strippers, Down-Face Machines, Brick Machines, Mixers, Skip Loaders, Straub Ostrowellators

Bigger BIG PAY LOADS with the New #3½ Smith-Mobile!

May be mounted on relatively light, 2-axle truck, if desired.

9 CU. FT. GREATER DRUM VOLUME

165 cu. ft. drum volume of No. 3½ Smith-Mobile permits bigger payloads.

...and yet Smith-Mobile WEIGHS LESS

More Profit Per Load!

Now — you can mix and deliver more concrete on every trip by using the new No. 3½ Smith-Mobile Truck Mixer. It has a drum volume of 165 cu. ft. . . . *nine cubic feet more than competitive 3-yard mixers.* This additional pay load capacity gives ready-mixed concrete operators EXTRA PROFITS with every load. In spite of this big feature, the new No. 3½ Smith-Mobile weighs less than competitive 3-yard machines. Actually, it does NOT require the 6-wheel truck shown in the illustration above, except for unusual load or ground conditions. A relatively light, 2-axle truck is usually all that's needed.

Then consider Smith-Mobile's many other features: HIGH DISCHARGE without hoist . . . CONTROLLED DISCHARGE without segregation . . . VISIBLE MIXING . . . FEED CHUTE CHARGING . . . etc., *the ONLY truck mixer with all these features.* Be sure to get your copy of the new Smith-Mobile Catalog No. 198-B.

THE T. L. SMITH CO. 2887 N. 32nd St., Milwaukee, Wis.

SMITH

SMITH-MOBILE *The Original High-Discharge* TRUCK MIXER & AGITATOR

A 3682-1P

The CONCRETE MANUFACTURER

A SPECIAL SECTION OF PIT AND QUARRY DEVOTED TO PRODUCTION MARKETING AND USES OF CONCRETE PRODUCTS AND READY - MIXED CONCRETE

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These bins at the concrete-mixing plant at Shasta Dam in California are kept filled with aggregates which are brought overland by one of the longest belt-conveyor systems ever installed, nearly 10 miles in total length. The receiving end of this conveyor system is shown at the left, distribution to the bins being accomplished by the shuttle conveyor shown.

New Roofing-Tile Plant Is Opened at Miami

The Brady Roofing Tile Manufacturing Company recently put in partial operation its new roofing tile plant at 2751 N. W. 72nd Street, Miami. Most of the equipment was moved from the old plant and some new equipment was added, including a Stearns concrete mixer. The company is a partnership of L. W. Nelsen, well-known Illinois concrete-pipe and products manufacturer, and his daughter, Miss A. L. Nelsen.

Business has dropped off badly recently due to the virtual stoppage of private construction in the Miami area so Mr. Nelsen has gone after and obtained contracts for government and defense-housing construction in order to get a market for his tiles. Mr. Nelsen's previous contracting experience has been invaluable to him in this work.

Fires 41 Workers, But Rehires 35 Next Day

The Platte Valley Cement Tile Manufacturing Company at Scottsbluff, Nebraska, closed down for one day recently when the owner, George Lillie, discharged 41 of 45 employees who had signed a petition to form an A. F. of L. union. The owner declared that he discharged the group after learning the petition had been signed by the workers without informing him of their plan.

The plant was back in operation the next day after Mr. Lillie rehired 35 of the 41 men who were discharged. Officials of the Nebraska Federation of Labor termed the temporary closing of the plant a flagrant violation of the national labor law.

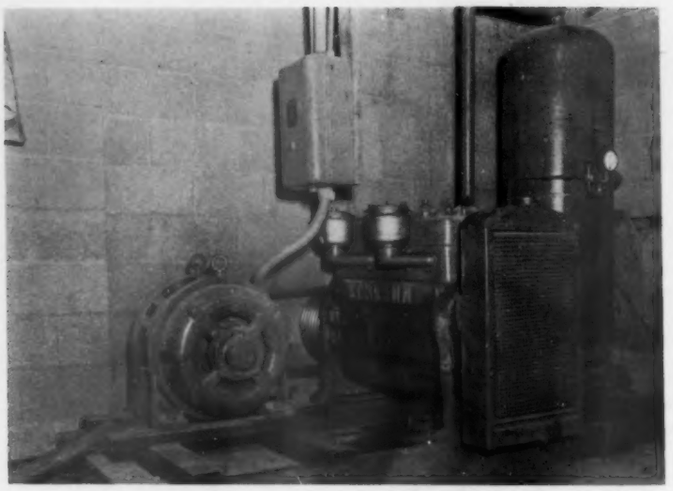
The company also operates plants at Fremont and Kearney, Nebraska, and has a $37,000 contract to supply cement tile to a Colorado army cantonment and a $42,000 contract on an army munitions dump in South Dakota. Trucks have been hauling 3,000 feet of cement pipe to Colorado daily.

Anderson Firm Observes Its Sixth Anniversary

The McVaugh Ready Mixed Concrete Company of Anderson, Indiana, is celebrating its sixth anniversary. Frank McVaugh, former county surveyor, heads the concern which has had a steady growth due to increased building during the past few years.

Block Plant in Detroit Installs an Automatic Air-Powered Machine

1. One of the newest types of automatic block machines, known as the Multico, has been installed in the plant of the Cecil Concrete Block Company in Detroit. Powered by compressed air, the machine combines vibration, tamping and pressing to form the units, three 8-inch blocks being made at a time on separate cored pallets. The Multico can complete up to three cycles per minute, and the mold boxes can be changed quickly. Production at the Cecil plant is aided by a Multiplex standard tamper. Both machines are supplied with concrete via cleated belt-conveyors from an 18-cubic foot Multiplex batch mixer located on the operating floor. Aggregates are measured by volume from a steel overhead bin in a manually-controlled batch box above the mixer. Sacked cement and water are added by the mixer operator.



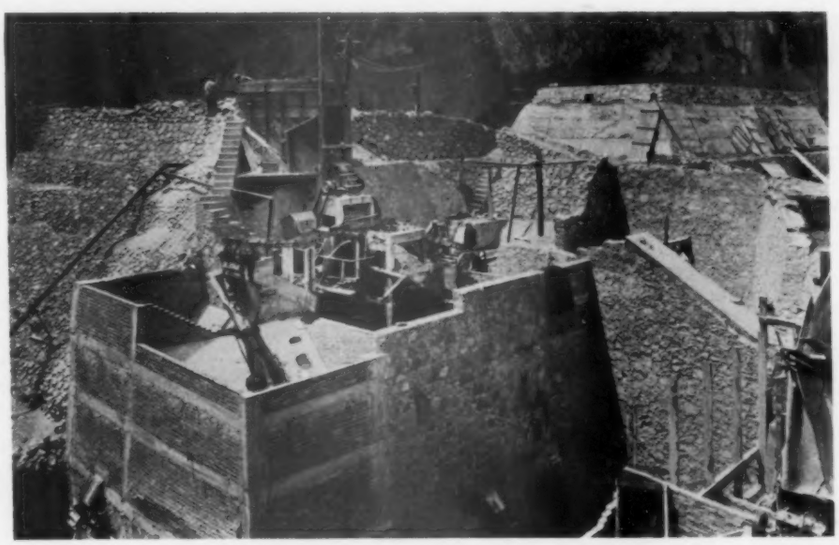
3. Air for operating the block machine and the off-bearing hoist is supplied by this electric-motor-driven Schramm 6-cylinder compressor. This equipment is located in a room immediately adjoining the Multico machine, thus keeping the air-line piping as short as possible.

2. An off-bearing hoist, also air-powered, is employed to remove the blocks after they are stripped and the off-bearer places them in a convenient rack to be hauled away for curing. The illustrations below and to the right show how this is accomplished without back-breaking effort. Proficiency in operating the hoist is quickly acquired by the workman.

4. Since the new production machine was installed, the hand-operated lift trucks have been supplanted by this gasoline-powered Clark TrucLift. The lower picture shows the ramp and covered bin at the top of the plant by which aggregates are received by dump truck. Gravity feed of aggregates to the mixer eliminates any rehandling. Except for the addition of the equipment shown, there have been no changes in the plant since it was built at its present location on Freeland Avenue and described in the August, 1940 issue of PIT AND QUARRY.

Ready-Mixed Concrete Introduced to Mexico City's Construction Industry

The batching plant and aggregates-production facilities on the quarry floor.



Washing-and-screening plant and storage bins.

THIS year, for the first time in the history of the Republic of Mexico, transit-mixed concrete is on the market. Its introduction in the nation's capitol, Mexico City, has met with immediate approval, and progressive contractors have assured the success of the venture. The pioneer organization is Concretos Cientificos, Arbide, S. A. The company operates under license of the Scientific Concrete Service Corporation of Washington, D. C., leasing the (SC)² Method used in plants in the United States.

The president of the new firm, Senor Ingeniero, Nicanor Arbide, is no stranger to the concrete industry. For a number of years he has headed the only factory in the country manufacturing corrugated concrete pipe. Wherever one sees construction, there one sees the pipe manufactured by this company in use. The pipe works, equipped with McCracken machinery, is at present turning out an average of 2,000 linear meters per day. In addition, the same firm has long been in the material business, selling screened sand and gravel from its extensive holdings at the factory site, where the new ready-mixed-concrete plant is also located.

The plant is located about 10 kilometers (6.21 miles) from the business section of the city where the Arbide organization owns large deposits of sand and gravel. The materials are of volcanic origin deposited when nearby volcanoes erupted ages ago.

The new organization has purchased all its equipment in the United States except the washing plant, which was made in Mexico.

The batching lay-out consists of a Butler 80-cubic meter (104.64-cubic yard) bin with three aggregate compartments and one cement compartment. The bin has a three-compartment, 3-cubic meter (3.92-cubic yard) weigh-hopper with special (SC)² Toledo combination dial-and-beam scale with electric cut-off for water and an Esterline-Angus "Inspectograph" for recording all the weighing operations. The plant also has a combination (SC)² Toledo dial-and-beam, 100-kilogram (220.46-pound) Moisture-meter scale. This scale is used for determining the specific gravity of the aggregates and other laboratory work connected with the manufacture of concrete. It also furnishes a rapid method for determining the percentage of moisture in the aggregates. Moisture determinations that are accurate to the nearest ¼ per cent. by weight are made in less than a minute.

By HARRY WOOSNAM

The washing plant has a rated capacity of 1 cubic meter (1.30 cubic yards) of washed materials

Loading sand and gravel. Line of demarcation between overburden and usable material may be clearly seen.

every 30 seconds. It consists of a stationary grizzly with 4-inch openings over a secondary grizzly, also stationary, with 2-inch openings. The materials held by these grizzlies pass by gravity into a Jeffrey crusher and are reduced to 1½-inch-down material. Material passing through the grizzlies and the crusher are channelled over two vibrating screens for washing and classification. The top vibrating screen has ½-inch openings and the bottom ¼-inch. Material rejected by these screens goes direct to the concrete-and-brick storage bins, and material falling through the screens goes into the sand washer, which is a long narrow concrete tank through which passes an endless chain equipped with paddles that scoop the sand into the storage bin. It is designed to remove any excess of very fine material.

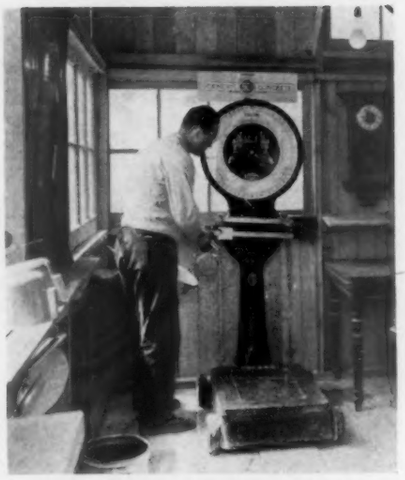
Above the washing plant is a concrete water tank whose capacity is rated at 400 metric tons (881.84 tons). Water for all the operations is supplied by a Demingco electric pump, capacity 3 cubic meters (3.92 cubic yards) per minute.

The specific gravity of the materials available in Mexico varies widely from that of those commonly used in the United States. The specific gravity of the sand averages 2.53; 1½-inch-down gravel averages 2.375, and the ½-inch-down gravel 2.44. The fineness modulus of the sand ranges from 2.95 to 3.17.

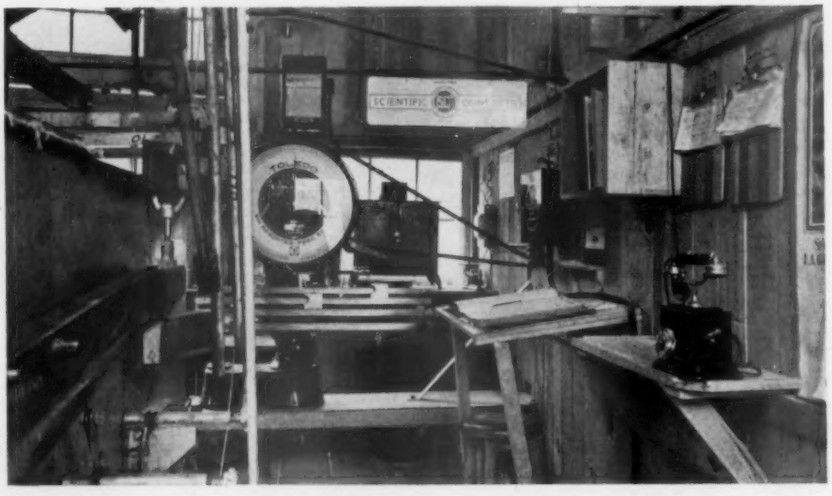
The firm has taken advantage of the fact that in the past two levels of excavation have furnished the materials. The lowest level is now the ground level for both the washing plant and the batching bin. By building a retaining wall back of the batching bin it was possible to build a bridge from this wall over the bin and use dump trucks to load the bin.

The raw materials are obtained at present from the upper level. The bank has an overburden averaging about 3 meters (9.84 feet) thick composed of dried earth having approximately the same hardness as soft rocks. The overburden is separated by hand and with a P & H clamshell crane. The sand and gravel are then processed in the washing plant.

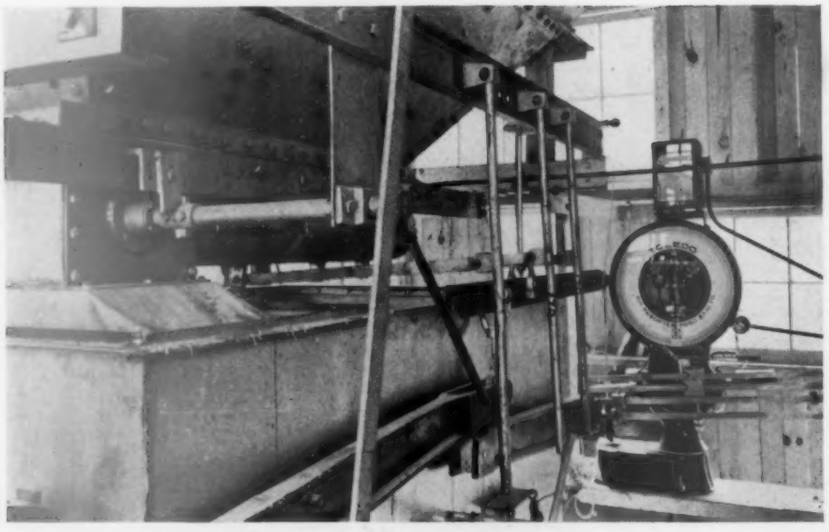
The company has built quite an amount of new road in order to engage in this business. In addition to the road between the lower and upper levels, it is building a road to connect with the public highway. This road will be wide enough for the passage of two trucks and for a railroad spur which will connect the firm's property with the Tolteca Cement Company plant, 1 kilometer (0.62 mile) distant. For this work about 8,000 cubic meters (104,640 cubic yards) of earth fill was necessary.



Operator making a determination for moisture.



Another view on the batching floor.



Batching hopper and weighing equipment.

The company is operating seven high dump mixers. More trucks have been ordered.

Accurate and practically automatic compensation for the moisture carried by each size of aggregate is provided by means of specially designed scales. At frequent intervals, at times from every batch, samples of the sand and coarse aggregate are tested for moisture by means of the Moisture-meter scale which, without calculation, determines the percentage of free moisture to within ¼ per cent., as has already been said. As the moisture test requires less than 1 minute and is simple, it can be made by one of the weighmen.

Compensation for the moisture is made automatically on the batching scale, which is a full dial scale having a separate beam and poise for

The truck-mixer fleet.

each ingredient, including water. Each aggregate that carries free moisture is assigned to a special scale beam equipped with a compensating-type poise so designed that by adding small disks, calibrated in percentage, its weight can be increased by any desired percentage. Thus, when a poise is set to the weight of the dry material required, and disks totaling the percentage of surface moisture carried by the material are added, the dry weight plus the weight of the contained moisture will be shown on the dial. The proper bin gate is then opened, and as the material enters the weigh-hopper the scale indicator moves backward until it reaches zero, when the correct amount will have been weighed out.

After each aggregate has been weighed in this manner the poise assigned to the water is set at the total weight of water required for the batch, and the percentage disks previously added are removed. This automatically deducts the exact amount of water carried by the aggregates from the total required for the batch, leaving only the net amount to be added, which will show on the scale dial. The water is weighed into a separate compartment of the weigh-hopper through a solenoid-operated valve, controlled by a mercury-magnetic switch built into the scale. The latter causes it to close automatically when the scale pointer reaches zero, thus insuring the correct amount.

One of the truck-mixers on a construction job.

By this method the total water in each batch can be held to a tolerance of less than 1 gallon per cubic yard, which insures unusually close control of the water-cement ratio. A graphic recorder attached to the scale head makes a permanent record of every movement of the scale and shows the weight of each ingredient and the compensation made for moisture carried by each aggregate.

The water is dumped directly into the mixer followed by the aggregates with the cement last. It will be noted that the truck driver is relieved of any responsibility for the addition of water. He has instructions to start the mixer about 10 minutes before he reaches the job, which seems to give the right mixing time.

The condition of the local cement market has helped the new concern to make a quick start. The Tolteca Cement Company, whose Mixcoac plant is a stone's throw from the ready-mixed-concrete plant, supplies, with the help of its other plant in Hidalgo, about 45 per cent. of all the cement used in the country. Previous to the start of the war some cement had been imported from Europe and Japan, but the war cut these foreign sources and increased the demand for defense needs, as a result of which Tolteca has had inresult of which Tolteca has had inquiries from Canada to South America.

Because the new ready-mixed concrete company takes all its cement in bulk, the ready-mixed business is assured of a steady supply of cement. By purchasing ready-mixed concrete the contractor is relieved of the problem of finding cement and of finding storage space for cement and other materials, a problem that is often difficult, especially in the downtown district of Mexico City.

The Tolteca company makes a standard Portland cement. So far the writer has not seen any high-early-strength cement, either foreign or domestic, in use here. There is a race at present between two contractors building 14- or 16-story skyscrapers reminiscent of the skyscraper race in New York a few years ago. These buildings will be the tallest in the city. Away from the business district, the construction of residences is booming. Since, in Mexico City, little wood is used in the construction of houses, the cement and brick industries are being called upon to furnish unusually large quantities of materials. The two types of construction, residential and business, are at present the main reason for the busy condition of the cement industry.

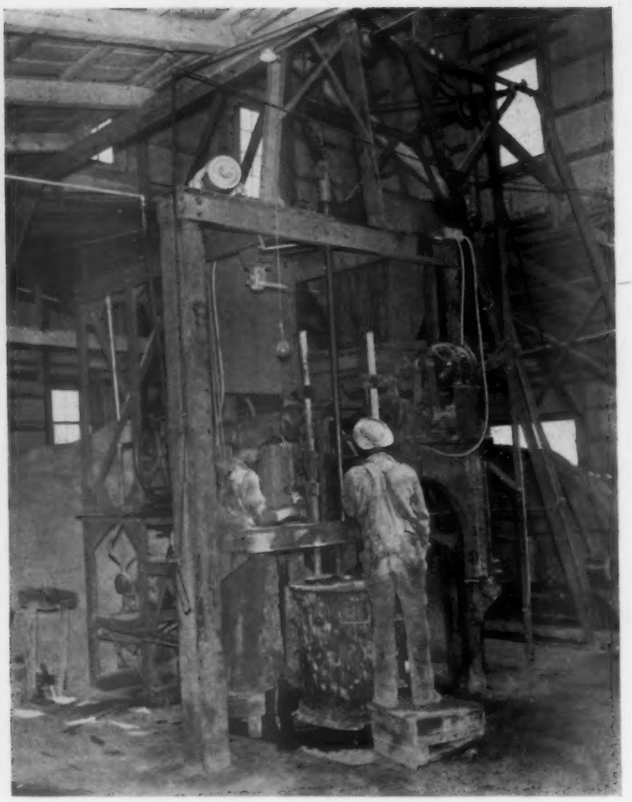
Comparatively few all-concrete roads have been built in Mexico, partly due to the cost. However, here in the capital where "doubly"-reinforced concrete was used on one road, it was found that the cost of up-keep was considerably reduced. Mexico City is built over what geologists believe to be the mouth of an extinct volcano. Originally the present location of the city was a lake which was drained by the Spaniards. This condition makes it necessary to use piles for buildings of any considerable size. It also accounts for the necessity for heavy reinforcing in the concrete road mentioned above.

It is uncertain at present to what extent concrete will be used as a road material because of the steel shortage caused by the war. One of the most prominent engineers in Mexico, Sr. Federico Barona recently advanced a plan for the construction of concrete roads with much less reinforcing than is usually used. The plan has been tested on several roads in the city that are subjected to very heavy truck traffic and has proved thus far to be satisfactory. Possibly the adoption of this plan will change the concrete-road construction situation in Mexico. It is interesting to note that the progress in road building has been accompanied by an increase in registration of all types of gasoline-driven vehicles throughout Mexico, from a total of 95,283 in 1935 to a total of 145,655 in 1940.

Equipment for handling and placing the concrete used in Mexico ranges from the most primitive type

(*Continued on page 75*)

The mixer and skip which feed pipe-machine in background.



Pipe-machine in the recently constructed plant at Albany.

Georgia Concrete Producer Shares in Defense Program Construction Boom

THE Camp Concrete Products Company of Columbus, Georgia, a pioneer producer of concrete products, has been an important factor in the defense program in that section. Already an important producer of concrete block and pipe in that city, it added ready-mixed concrete to its line late in 1939. In October, 1940, a new concrete-pipe plant was built at Albany, Georgia, 90 miles southeast of Columbus, to serve the south-central part of the state. All the company's activities have contributed in varying degrees to the speeding up of the defense program.

An article published in the November, 1938 issue of PIT AND QUARRY, page 85, described the company's Columbus operations. At that time concrete pipes from 6- to 30-inches in diameter were being made by an R & L tamper-type machine. Larger pipes were made in forms with a Syntron electric vibrator. Concrete blocks were made by a Besser plain-pallet, semi-automatic stripper block machine which was installed in 1937. All this equipment is housed in a modern concrete-block building erected in 1937. At the same time the company's very attractive concrete-block office building was built. Early in 1939 a new concrete-block structure was completed for the manufacture and storage of burial vaults, garden furniture, concrete posts, joists, and other specialties. The burial vaults are made under Norwalk and Doswell-Kovel patents. No changes have been made in these operations. An interesting sidelight is the fact that the boiler which supplies the steam for the curing rooms is now fired with pecan hulls instead of coal at a considerable saving. The hulls are obtained from a near pecan-packing plant. Clark gasoline lift-trucks are now used in the block plant.

Left to right: J. L. Torbett, sales engineer; L. K. Camp, assistant manager; and W. M. Camp, manager, at the office entrance.

The concrete-block business has prospered in spite of the fact that clay bricks made locally sell for $7.00 per thousand. Most of the sales have been for basements or back-up and partition work, but sales for exterior use have increased recently. The building of demonstration houses helped to accelerate this demand. Over 150,000 blocks were supplied for the foundations of the Newton

D. Baker white housing project in Columbus. Over 200,000 blocks were furnished for foundation, back-up, and entrance panels for the Booker T. Washington Negro housing project, also in Columbus. A defense-housing project at Fort Benning, Georgia, just outside Columbus, one of the largest army camps in this country, used 70,000 blocks for foundations. Many other similar

Power-driven lift truck which handles the loaded and empty racks.

projects, schools, etc. are contemplated for this area.

The concrete-pipe business has also been increasing, due in part to defense demands, including an airport at Americus, Georgia. In the last few years over 40 miles of 6- to 48-inch sewer pipe has been sold to the city of Columbus alone.

The ready-mixed-concrete plant consists of a 75-ton, 2-compartment Blaw-Knox steel bin for sand and gravel. There is also a wooden bin for pea gravel which is used for 1:4:8 concrete. This concrete is used by the local telephone company for conduit bases and is also in some demand for floor and roof slabs. Some pea gravel is also used in the richer mixes sold to cover steel joists and expanded metal. The plant is located near a hill and the aggregates are dumped from trucks direct into the bins. Cement is received in bags which are chuted to the warehouse near the batching floor. The cement is dumped from sacks through a box into the truck-mixers. The aggregates are weighed into these mixers through a Blaw-Knox weighing batcher.

The original fleet of three truck-mixers has been expanded to six because of the growing demand. Three

A welder forming reinforcing cages in the plant at Albany.

Jaeger, one Blaw-Knox and two Chain Belt Rex truck-mixers are used, all of 1½- to 2-cubic yard capacity and all mounted on Ford truck chassis.

The increased demand is largely due to a building boom caused by the expansion of Fort Benning. A few years ago the personnel at the fort consisted of 5,000 officers and men. Now there are over 75,000 persons, not including the families, many having moved to this area. The concrete output has been as great as 173 cubic yards in one day and on one large job 2,000 cubic yards was supplied in 8 days.

The new Albany concrete-pipe plant is located in a 7-acre pecan grove and the finished pipes are stored between the rows of bearing trees. Aggregates are received by railway and are fed in wheelbarrows to the 25-cubic foot Besser mixer. A skip bucket elevates the concrete to the feed hopper of the Universal tamper-type pipe machine. A paddle-type mixing feeder discharges the concrete through a chute into the forms on the turntable. This machine has a main tamper for pipes from 6- to 18-inches in diamter. A side-arm tamper is swung into posi-

The Columbus batching plant with one of the truck-mixers in foreground.

tion for pipes over 18 and up to 60 inches in diameter.

The form revolves on the turntable about a stationary core; this gives a smooth interior finish. A Shepard electric hoist with an automatic stop lifts the core. A 20-horsepower Westinghouse motor drives the turntable through V-belts, gears and a clutch. Three gear speeds are used for different sizes of pipe. Each tamper is operated by a 5-horsepower Westinghouse motor and the feeder is driven by a 2½-horsepower gearmotor. The mixer is driven by a 15-horsepower Fairbanks-Morse motor and the skip, too, is operated from this motor by cable.

The reinforcing wire cages, or "baskets" as they are called here, are rolled at the plant and are welded by a Wilson "Wasp" portable electric welder using ordinary welding rod. There are four 20- by 100-foot

(Continued on Page 75)

The Columbus plant with warehouse at the right

The CONCRETE MANUFACTURER

In Block Business Since 1939; Has Since Added Two More Machines

General view of the storage yard with plant in background.

ALONG with other cities in Florida St. Petersburg shared in the almost mushroom-like-growth which, interrupted for a few years by the depression, was until recently again in full swing. St. Petersburg, according to the 1930 census, had 40,425 inhabitants and the 1940 census showed an increase to 60,812 persons. It is estimated that at the "peak" of the season the population is nearly 100,000 greater.

The Dann-Gerow Company, a pioneer building-material and ma-

The skip and mixer which serve the brick machine and one block machine.

sons' supply dealer of St. Petersburg, decided to participate more fully in the building boom by manufacturing concrete-masonry building units. In June 1939 a Dunbrik machine and two Appley vibrating block machines made locally, were put in operation. Business was so good that another block machine was added after six months and still another after a year of operation. Each machine has a capacity of about 1,000 blocks in an 8-hour day.

The most popular concrete building unit in this area is the standard 8- by 8- by 16-inch block, which is used chiefly for the exterior walls and foundations of houses and small business buildings. When used on exteriors these blocks are coated with cement paint. There is also some demand for 4- and 5-inch block and 4-, 5-, 8-, 12-, and 16-inch tiles, and any other types or sizes called for can be made. The concrete bricks are used for heater flues, chimneys, decorations, etc. Most of the building is done outside the winter season during which comparatively slack building season reserve stocks are built up. This stock usually amounts to about 50,000 standard blocks, 48,000 of the 5-inch, 15,000 of the 4-inch, and smaller amounts of other sizes of blocks and tiles. About 75,000 concrete bricks are kept on hand.

The plant is unusually compact and occupies a space only 40 feet square. Sand from Lake Wales and crushed limestone from Brooksville are received *via* the Seaboard Railway and unloaded manually to piles. These aggregates are then loaded into barrows which are weighed on a Howe scale before the materials are dumped into the Dunn skip-bucket feeding the Dunn mixer. This machine mixes concrete for the Dunbrik machine and two of the block machines. The other two block machines are served by a ½-bag portable gasoline mixer.

The bricks and blocks are loaded on steel racks which are hauled by

A 6-inch block being ejected from one of the machines.

Dunn hand lift trucks into the four steam-curing kilns. These hold 640 standard blocks each and are kept at 112- to 120-degree F. temperature by a Kewanee Type R 15-pound boiler which is oil-fired. After 18 hours these units are taken to outdoor storage. The blocks are piled on their sides 15 high and 30 deep to take advantage of the ventilation afforded by Gulf breezes.

The scale on which barrows of aggregates are weighed before dumping into skip.

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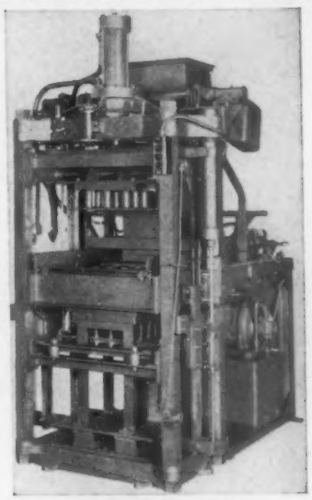

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Arbide *(from page 71)*

to the most modern. In one of the pictures it will be noted that the concrete is being carried in five gallon kits on the backs of laborers up a series of ramps for placement. This method is commonly used. It is possible because the men are paid an average of 2½ pesos a day which would correspond, at present rates of exchange, to about 55 cents in United States currency. The biggest contractors, however, have modern American equipment.

Concrete is sold on a strength basis by the new company, four degrees of slump being available in each strength classification. The prices are based on the amount of cement used.

The low cost of labor makes competition with job-mixed concrete difficult but the economy in operation and the better, more reliable concrete produced by the $(SC)^2$ Method is gradually winning with the more progressive contractors.

In addition to supplying the special batching equipment, the Scientific Concrete Service Corporation furnished a concrete technician, the present writer, who installed the equipment and generally helped the new company to get started.

Camp *(from page 73)*

curing rooms with non-inflammable celluloid-wire windows. These admit ample light for inspection of the finished pipes. The plant capacity is 300 feet of 24-inch reinforced tongue-and-groove highway pipe in 7 hours. In the same period 120 feet of 36-inch pipe or 1,000 feet of 12-inch bell-and-spigot pipe can be produced.

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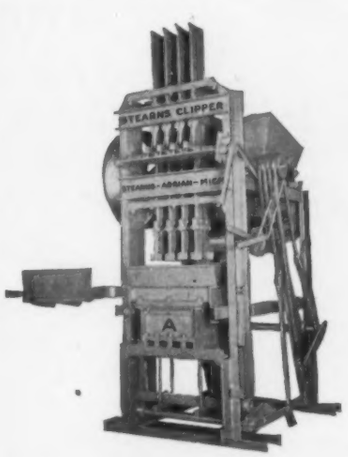

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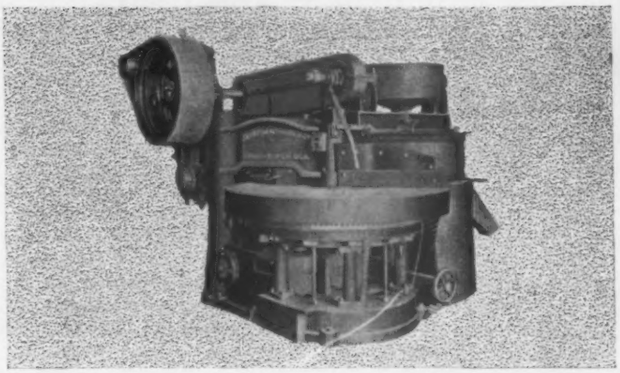

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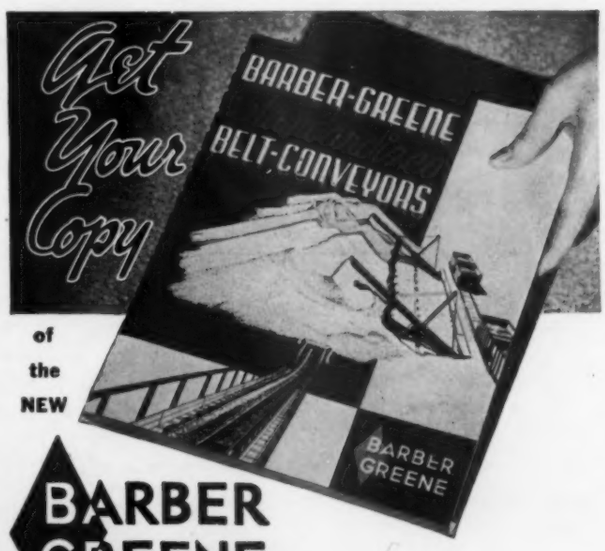

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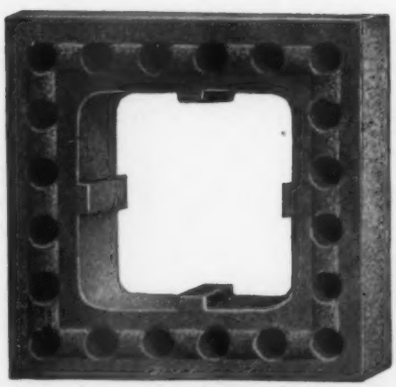

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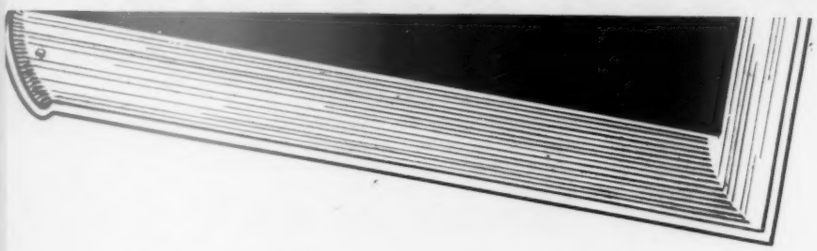

Directory Section listings appear two ways—(1) alphabetical by companies, (2) geographical by plants. You get company names, officers, location of plants, size or capacity, and the names of the men who do the buying. Choose the complete Handbook and Directory . . . or the convenient, flexibly-bound Directory alone. Order NOW and get one of the first copies off the presses. Use the handy coupon below.

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Buckeye Clipper with

Pit and quarry men want a shovel that can hit the ball 365 days a year, especially now when maximum production is so important.

Such a shovel is the Buckeye Clipper and its exclusive Mevac Vacuum Power Control makes it so. There are no long levers to tug and tire the operator. Just a few small handles are flipped and you get fast, smooth action. Yet, operator has full "feel" of the work. No air lines to freeze in winter, no condensation troubles in summer.

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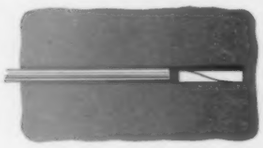
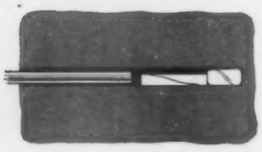
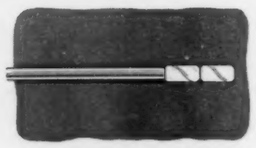


The regular-size cartridge goes in the bore hole. Note the space to be filled.

Pressure from the tamping rod compresses the powder to fill the space.

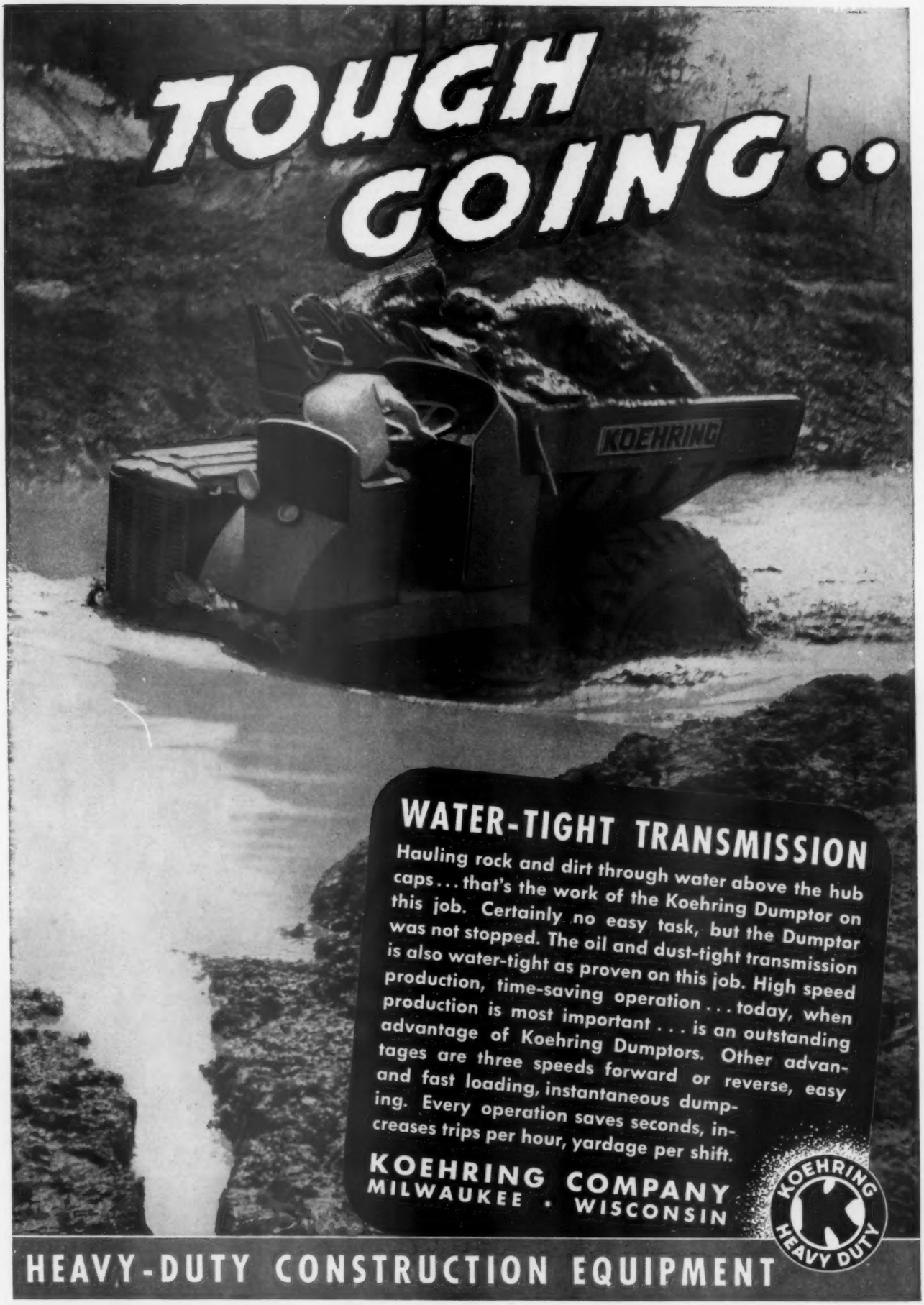


Another cartridge goes in—Compaction takes place inside the wrapper.



The charge is concentrated for better blasting results.

A-85


TOUGH GOING..
KOEHRING
WATER-TIGHT TRANSMISSION
Hauling rock and dirt through water above the hub caps... that's the work of the Koehring Dumptor on this job. Certainly no easy task, but the Dumptor was not stopped. The oil and dust-tight transmission is also water-tight as proven on this job. High speed production, time-saving operation... today, when production is most important... is an outstanding advantage of Koehring Dumptors. Other advantages are three speeds forward or reverse, easy and fast loading, instantaneous dumping. Every operation saves seconds, increases trips per hour, yardage per shift.
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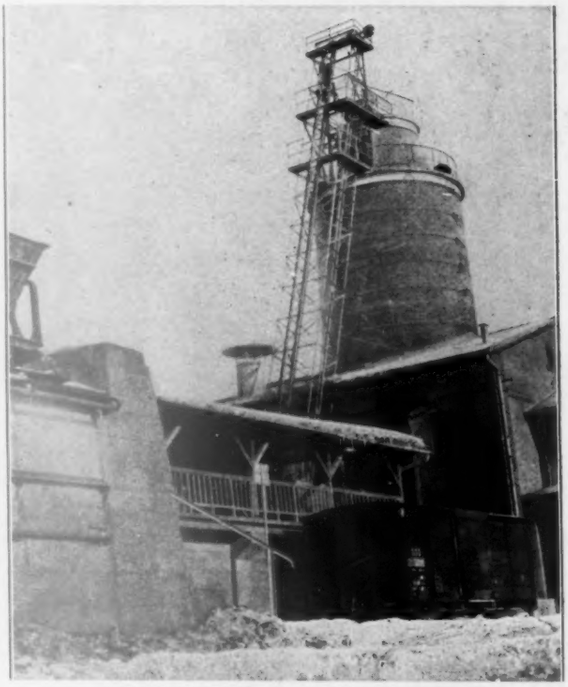
SOBEK-KUNTZ Super Lime Kiln



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100 TONS

Capacity per 24-hour Day with only 2 men per shift

The SOBEK-KUNTZ lime burning system is considered "peak development" for economy and efficiency by producers throughout the industry.

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To check the many features of the Simplicity Gyrating Screen; such as the solid counter-balanced shaft; resilient corner supports, double crowned screen decks, and many others.

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At the many successful installations of Simplicity Gyrating Screens and observe their capacity and screening efficiency.

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AND LISTEN

To all arguments pro and con; then buy the screen with the lowest ultimate cost per ton of material handled, which will be the Simplicity Gyrating Screen.

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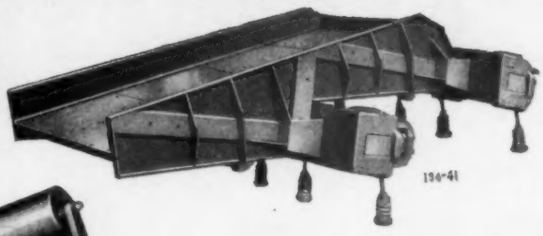
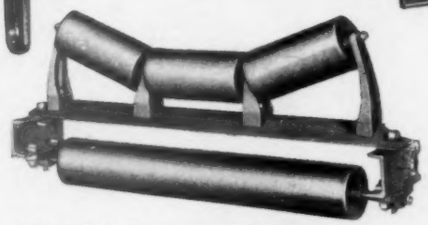
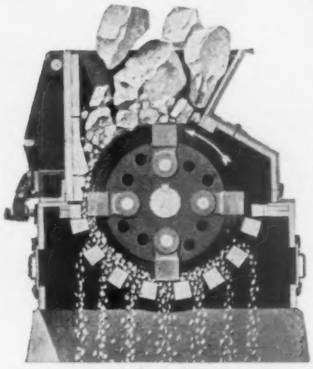
A type and size chain for every conveying, elevating and power transmission need. Peerless, detachable and steel knuckle are shown.



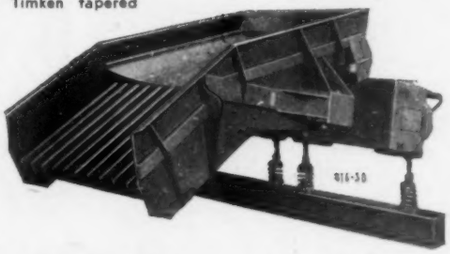


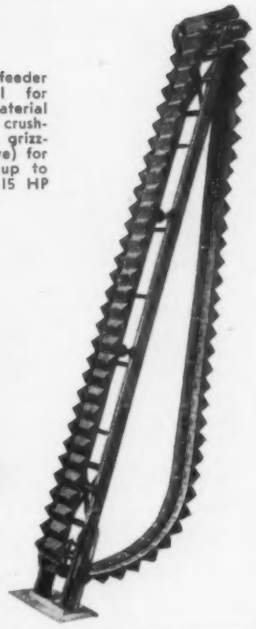
Jeffrey-Traylor electric vibrating feeder (patented) J-T feeders ideal for handling large run-of-quarry material from surge hoppers to primary crushers, hammermills, trommels or grizzlies. Special large feeder (above) for handling 48" lumps at rates up to 2000 T.P.H. with maximum of 15 HP required.

Jeffrey belt idlers are furnished in both troughing and flat belt types in widths from 14" to 60". Heavy steel rolls, accurately balanced and equipped with Timken tapered roller bearings.



Jeffrey-Traylor grizzly feeder (right) for by-passing fines ahead of primary and secondary crushers, screens, picking belts. Also electric vibrating screens and feeders (patented). The Jeffrey Miracle hammer crusher (left) is used for reducing large pieces of limestone, shale, slag and cement rock. Steam shovel size to 1", 2", 3" or 4" and under in one operation.





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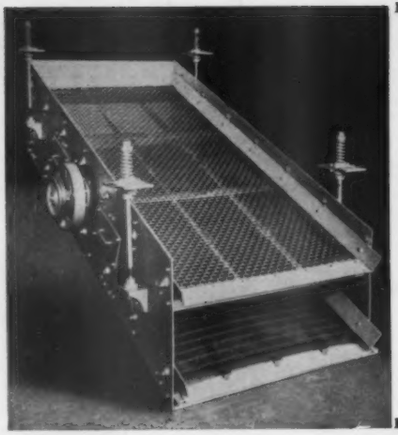

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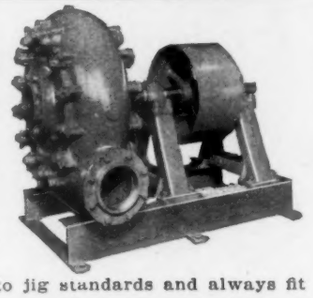

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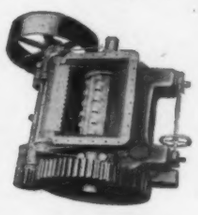

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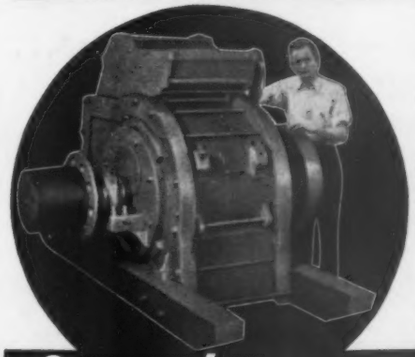
Complete portable, semi-portable and stationary crushing, screening and washing plants for different capacities of any materials.

McLanahan & Stone Corp. *Established 1835* HOLLIDAYSBURG, PENNSYLVANIA



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36"	6	1/8" — 1/16"
30"	6	1/8" — 1/16"
30"	5	1/8" — 1/16"
24"	5	1/8" — 1/32"
24"	4	1/8" — 1/32"
20"	5	1/8" — 1/32"
20"	4	1/8" — 1/32"
18"	4	1/8" — 1/32"
16"	4	1/8" — 1/32"
14"	4	1/16" — 1/32"
12"	4	1/16" — 1/32"

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16"	6	10"	5	5"	5
14"	6	8"	6	4"	5
12"	6	8"	5	4"	4
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16"	6	1/16" — 1/16"
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8" Traylor Bulldog Gyratory.
22x12 Reliance Jaw.
21x42 McLanahan Single Roll.
21x24 McLanahan Double Roll.
16x16 New Holland Double Roll.
ELEVATORS, HOISTS, COMPRESSORS

MAXIMON MACHINE CO.
801 N. Logan Blvd. Altoona, Pa.

ELECTRICAL MACHINERY

Motors and Generators, A.C. and D.C. for sale at attractive prices. New and Rebuilt. All fully guaranteed. Write for List and Prices.

V. M. NUSSBAUM & CO.
FORT WAYNE, IND.

FOR SALE

One No. 6 CHAMPION Crusher, Manganese Jaws. Capacity at least 50 tons per hour. Used Very Little. Owner has no further use for it. Priced to sell immediately.

E. E. AUSTIN & SON
20th and Reed Sts. Erie, Pa.

NEED DUMP CARS?

Immediate Delivery:
16, 24-yd. Koppel
9, 20-yd. Koppel
3, 20-yd. Western
24, 16-yd. Western
11, 16-yd. Kilbourne & Jacobs
62, 12-yd. Western
Illustrated specifications available—Other Types of Cars Too. Also Locomotives, Cranes, Shovels, Etc.

IRON & STEEL PRODUCTS, Inc.
13490 S. Brainard Ave. Chicago, Illinois
"ANYTHING containing IRON or STEEL"

PRICED FOR QUICK SALE

7-EASTON DUMP CARS and RAILS
5-Type A TUBULAR Lakewood TOWERS
Double & Triple Drum Hoisting Engines

ACORN IRON & SUPPLY CO.
915 N. Delaware Ave. PHILADELPHIA, PA.

GRAVEL PLANT

Sand and Gravel, Crushing, Screening, and Washing Plant, capacity 200 cu. yds. per hour—Sectional Steel Conveyors, Ball Bearing Gear-Motors, or V Belt Drives for all units. Now arranged for 440 volt, 3 phase operation. Motors suitable for 220 volts. Used only on one project.

BOX 612
PIT AND QUARRY PUBLICATIONS
538 S. Clark St. Chicago, Illinois

DEPENDABLE USED MACHINES

18 and 20 ton Fairbanks truck scales.
Haiss and Barber-Greene loaders.
Cedar Rapids duplex portable gravel plant.
Weller sand settling tanks.
Several bucket elevators; various sizes.
100 ft. compressor, rebuilt, cheap.
Cedar Rapids 9 x 36 crusher.

TRACTOR & EQUIPMENT CO.
3515 West 51st St. Chicago

FOR SALE

IMMEDIATE DELIVERY

2—Kent Ring Roll Mills, No. 3, perfect condition.
3—General Electric 30 KW, Gasoline Eng., Generators 115 Volts, D.C.
Electric Motors, 10-HP. to 125 HP. Slow speed, 3 phase, 60 cycles, 440 volts.

BURTON MACHINE CO., INC.
P. O. Box 191, Berkley Norfolk, Va.

FOR SALE

Barber-Greene Loader, Model 62. Complete, but not in running order. For sale as parts.

COURTOIS SAND & GRAVEL CO.
68 Darling St. Central Falls, R. I.

Royal E. Burnham

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DIAMOND CORE DRILLING
HOFFMAN BROS. DRILLING COMPANY
PUNXSUTAWNEY, PA.

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WE LOOK INTO THE EARTH

By using Diamond Core Drills We Drill for Limestone, Gypsum, Talc, Fire Clay, Coal, and all other minerals.

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Drilling Contractors
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Analytical and Consulting Chemist
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The Chemical Analyses of Minerals, Carbonate and Silicate Rocks.

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1—50,000 Gallon Water Tank and Tower.
2—357 HP Heine Type 175 lb. WT Boilers.
2—500 KW Cond. or Non-C. Turbo Sets.
1—"DDH" Full Diesel Cat. Tractor.
1—950 HP 275 lb. WT Boiler.
3—Tube Mills & Vulcan Rotary Dryer.
1—1¼ Yd. Full Diesel Shovel and Dragline.
1—60 HP Marine Full and 25 HP Diesels.

M. & P. MACHINERY CO.
5819 Enright Ave. St. Louis, Mo.

FOR SALE

40 cu. ft. 18" gauge ore cars.
8x36 Universal crusher.
20x14 Allis-Chalmers rolls.
9x15 Holthoff crusher.

THE SAWTOOTH COMPANY
Boise, Idaho

FOR SALE

1—No. 6 Champion Jaw Crusher.
1—Gyratory Reduction Crusher.
1—20 Ton Bennington Truck Scale.
1—240 Cu. Ft. Schramm Portable Compressor.
1—Michigan Truck Shovel and Crane.
1—G. A. Z. Erie Gas-Air Shovel.

JAMES E. SHELDON
Easton, Pa.

Advertise Your

"Wants" and Surplus Equipment

LOCOMOTIVES SHOVELS — CRANES CARS

1—50 ton American 4 wheel saddle tank, code boiler, standard gauge, being rebuilt.

1—22 ton American 4 wheel saddle tank, code boiler, standard gauge, overhauled.

2—40 ft. steel flat cars, 100,000 lb. capacity, cast steel "U" section truck frames, new decks, interchange condition.

1—17½ ton Brownhoist Locomotive Crane, Overhauled, New A.S.M.E. Boiler.

Crane or Dragline Fronts for Marion 37 and Bucyrus 50-B, One Each.

1—1½ Yd. Rehandling Clamshell Bucket, Practically New.

Birmingham Rail & Locomotive Co.
BIRMINGHAM, ALABAMA

FOR SALE

New equipment for complete 30" Belt Conveyor including 1040'—30" Conveyor Belt 6 ply ¼" Top Cover with Breaker strip x 1/16" Bottom Cover 42 oz. Duck 3500—4000 lb. Cover; 50 Horsepower General Electric Slip Ring Motor and Reduced Voltage, Resistor Starter—Link Belt speed Reducer—36" Head Pulley—30" Tail Pulley, 24" snub Pulley necessary Pillow Blocks and Shafting. Belt Tightener, 109 Link Belt anti friction Troughing Idler, 13 Self Aligning Link Belt Troughing Idlers, 58 Link Belt anti friction Returner Idlers, 3 Rubber Tread Impact Troughing Idlers. Also one (1) No. 5 Ross Patent Chain Feeder with Motor and Link Belt Speed Reducer. This equipment received new during past six months and is in original crates. Purchaser must produce Priority Rating equivalent to P-56. Equipment is open to inspection.

Send Inquiries to
BOX 606

PIT AND QUARRY PUBLICATIONS
533 S. Clark St. Chicago, Ill.

CONCRETE EQUIPMENT

Erie 100 ton 3 compt. bin with weigh batcher.
B.K. 100 ton, 3 compt. bin with weigh batcher.
B.K. 50 ton, 2 compt. bin with weigh batcher.
200 ton rock storage bin, steel, heavy construction.
Fuller Kinyon bulk cement unloader, portable.
Fuller C40 rotary air compressor, electric.
Ransome 28-S 1 yd. Stationary mixer, elec.
Ransome Dual drum paver 27E.
Koehring 27E Paver, boom and bucket.
Smith 27E Paver with 40' Tower.
Barber-Greene Model 62 loader, cats.

SPECIALS!!

15"x30" Traylor Jaw Crusher.
3—30,000 gal. Asphalt Tanks.
2—Ruggles-Cole Rotary Driers 6'x30', 7'x35'
Allis-Chalmers cent. pump, electric, 3500 GPM, 50'.
2—Asphalt Mixing Kettles, 5,800 gal. each.
Steel Building 54'x110'x42'.
Sullivan Air Compressor 1051 cu. ft. F-Morse oil engine.
18" Belt Conveyor 175' center to center.
Road forms 8,000 ft., 10"x6", 9"x8", 8 x8".
Steel Pipe 14,000 ft. 2", 2½", 3".

BUCKETS—STONE SKIPS

22—Steel stone skips, 2 to 3 yds.
1 yd. Hayward rehandling clamshell.
Haiss 1½ yd. rehandling clamshell bucket.
2—½ yd. Haiss rehandling clamshell.
¾ yd. Haiss rehandling clamshell.
1 yd. Hayward orange peel, 4 leaf.
¾ yd. Hayward orange peel, 3 leaf.

SHOVELS—CRANES

Marion Model 125 elec. Shovel, 3½ yds.
Bucyrus-Erie 43B Diesel Shovel, 1¾ yds.
Bucyrus-Erie Model 1030 electric tunnel shovel.
No. 50-B Bucyrus-Erie electric shovel. 2 yds.
Bucyrus-Erie 50B Steam Shovel, 2 yds.
Link-Belt Crane, gas, 50' boom, 1 yd. cap.
Brownhoist Crane, gas, 40' boom, 1 yd. cap.
Osgood Conqueror Gas Shovel, 1½ yds.

LOCOMOTIVES—CARS

1—Vulcan 16 ton, 36" gauge, Diesel.
2—Vulcan 6 ton, gas, 36" gauge.
2—Porter 13 ton, Saddle Tank, steam, 36" gauge.
8—3 yd. V type 36" ga. side dump cars.

CRUSHERS—PLANT

Gyratory crushers: K.V.S. 30, 37-S, 49; Telsmith 32, 8A, 8B; Traylor 8"; McCully 13", 8", 6".
Jaw: 6x12, 9x16, 10x20, 12x26, 13x30, 15x30, 16x32, 36x48.

RICHARD P. WALSH CO.
30 Church St. New York, N. Y.

E. C. A. engineers know construction equipment from bolt to bearing and pin to piston, and they aren't "tight fisted" either. They don't stint on rebuilding costs.

Sell your idle equipment to E. C. A. and when it is rebuilt it will help us all win the war.

FOR SALE

AIR COMPRESSORS

Portable and stationary, belt with elec. or gas power, sizes from 20 cu. ft. to 1,000 cu. ft.

BINS

4—1 150-ton Blaw Knox, 1—115-ton Blaw Knox, 2—60-ton Butler, V-40, 1—30-ton Johnson. Above with or without weight batchers.
All of the above are 2 comp. bins.

CABLEWAYS

1—Lidgerwood 15 ton cap. cableway, 2300' span, with Lidgerwood 12¼x15 steam hoist, with or without steel towers.

CRANES, DRAGLINE AND SHOVELS

1—Link Belt, K-48, Ser. No. 1728, 60' boom, 2 yd. bucket.
1—P&H, Model 655A, Ser. # 6526, 45' boom and 1½ yd. shovel attachment. Diesel powered.
1—Lorain, Model 77, Ser. # 9163, with 1½ yd. shovel front. Diesel powered.
1—Link Belt K42, Ser. # 1265, 45' boom, 1¼ yd. bucket, also 1¼ yd. pull shovel attachment.
1—Northwest Model No. 5 Ser. # 3572, 50' boom with 1¼ yd. pull shovel attachment.
1—Northwest model 104, Ser. # 1386, 45' boom, 1¼ yd. bucket; with 1 yd. trench hoe attachment.
1—P&H, Model 650, Ser. # 4173, with 40' boom and 1¼ yd. shovel attachment.
3—Northwest Model No. 4's, Ser. # 3441, 3445, 3493, with 40' boom and 1 yd. pull shovel attachments.
2—Erie, gas air, 2 yd. Ser. # 4365, 9758, with 45' boom and shovel attachment.
1—Osgood Heavy Duty, Ser. # 2069 and 40' boom, 1 yd. bucket and with 1 yd. shovel attachment.
1—Osgood "Commander" ¾ yd., 30' boom, Ser. # 2403 with ¾ yd. bucket.
1—Thew ¾ yd. Gasoline Shovel with ¾ yd. shovel front and 40 ft. crane boom. Serial # 2801.
1—Koehring Model 301, Ser. # 544 and 40' boom, ¾ yd. bucket.
1—Byers Bearcat, Model 27, Ser. # 5289, 30' boom, ½ cl. sw. ½ yd. bucket.
1—Erie Steam Crane, 40' boom with or without ¾ yd. shovel front.

CRUSHERS

4—Jaw Crushers: 1—12"x20" Acme; 1—10"x20" Climax; 1—9"x16" Acme.
2—Gyratory Crushers: 1—No. 5 Allis-Chalmers; 1—No. 5 Austin.
1—Crushing Rolls: Size 42"x16" Allis-Chalmers.
8—Steel guy derricks; 5—20 ton American Terry, 90' mast, 80' boom; 1—15 ton Terry, 115' mast, 100' boom; 1—10 ton Leverington Gerrigan, 100' mast, 90' boom; 1—4 ton Bedford, 90' mast, 80' boom.
2—Steel Stiff Leg derricks; 1—15 ton Just, 24' mast, 65' boom; 1—10 ton American Terry, 45' mast, 110' boom.

HOISTS

55—Electric ranging from 20 HP up to 120 HP. Consisting of triple, double and single drum with AC or DC motors. Have attached swingers for some.
Gas—hoists ranging from 8 to 120 HP single, double and triple drums.

PUMPS (DREDGE)

2—10" Morris Dredge pumps, 1 to direct connect to motor, other belt drive.
4—Belt driven: 3 Morris Mang., 1—8"; 2—6"; 1—8" Cataract.

TRACTORS

2—Fordson tractors, equipped with winches.
1—Taylor tractor, Mdl. A-16-30.
1—Fordson Caterpillar tractor.
2—Allis-Chalmers, Mdl. L, 12 ton, No. L638, 684, with Baker Hyd. Bulldozers.
1—Allis-Chalmers, Mdl. 75, Ser. # 7049, 12 ton gas powered.
5—Caterpillar, 1 Mdl. 65, 2 Mdl. 60, 12 tons; 2—mod. 30, 5 ton, 1 with derrick attach.; 1—Mdl. 60 has LaPlant Choate bulldozer.

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EQUIPMENT CORPORATION of AMERICA

FOR HIGH STOCK PILING OR SPOIL

165' boom—adjustable for height.
250 HP Hoist Motor—5 ton aluminum car (counter balanced).
All electric with cab control. Caterpillar mounted with individual travel and steer motors.
Ideal for disposing of material from short-boom shovel.

Address inquiries to—

HUNTSVILLE-SINCLAIR MINING CO.
114 W. 11th St. Kansas City, Missouri

Sell Big K. C. Bridge Co. Stock

Locomotive 15T Bucyrus 8 Wh. 40' Bm. crane.
Plymouth (4) 3 ton 36" Ga. locomotives.
Derricks, steel, (13) lgths. in sections to 85'.
Lambert & Munday 3 & 2 drum hoists (7).
Compressors, (9) Steam, Sullivans, Gardners, Laidlaw-Dunn-Gordon, up to 3 of 1850 C. F. Cap.
Air Receivers, (8) from 30"x6' to 48"x12'.
Cofferdam steam pumps, 100 to 1000 GPM.
Clamshell, Williams, (7) ¾ & 1 yd. ready.
Mixers, 7S to (3) 28S Koehring, hoppers & tanks.
Drills & Riveting Hammers, Diving air compressor.
Reel Est. 1500 ft. 1¼" Leschen wire rope, also some 1½". Shop, everything. Concrete & Muck buckets, round & square, open & closed bottoms.
Material 25 yd. st. bin, 1 yd. hoppers, weighers.
Miscellaneous pile Equip. 5 tons bolts to 40" lg.
Link-Belt cranes, up to 85' bm. 3 yd. bckt.
Sauerman, 2 drum 100 HP Elec. hoist & cables.
Buda D-4 Diesel, 4 Cyl. 6"x8" available now, with Radiator, housing, two cyl. gas start engine, clutch & pulley. 90 HP.
Wisconsin DT-4 6 Cyl. 108 HP. 5¾x6½ Housed, Elect. starter & battery clutch—radiator—outboard 13" Dia. x 12" face pulley. This engine precision rebuilt by expert. Both engines bargains, $1500.00 each disc. for two.
Lima 1¼ yard Comb. shovel & crane, reconditioned & wkng. Okla. Available for heavy duty rock service. Get it before too late.
RD 7 with LeTourneau Angle dozer, appearance and cond. first class.
Byers ¾ & ½ Yard Gas Comb. shovel & cranes. Both machines bang up and ready to go with latticed angle sectional booms. Bulldog & Heavy Duty shovels, priced right. (KC & St. Louis locations.)
Byers 62 & Lorain 37 shovel Attch., ½ & ⅝ size.

GEORGE C. KENNEY MACH. CO.
2136 Jefferson St. Kansas City, Mo.

Bucket Elevators — Continuous & Centrifugal — 5"x35', 6"x32', 12"x35', 14"x32', 15"x50', 16"x60', 18"x35'-40', 20"x40', 30"x35', etc.
15 Tons Selected Chain, Buckets, Sprockets for Continuous & Spaced-Bucket Elevators.
300' Waterproofed Belt, 8-ply 20" wide.
Cotton Belt 12", 18", 30" and 48" widths.
Salem type Buckets 5", 14", 16" and 18".
Malleable A Buckets 6"-12"-14"-15"-18"-20".
Continuous Buckets 18", 20" and 30".

Belt Conveyors
50 Selected Head & Tail Pulley Assemblies.
14"x70' Gravity Roll Sections, 6"-c. Rolls.
24"x50' Trough Belt Equipment, with frame.
30", 36" & 40" Robins Trough & Return Idlers.
Eureka Magnetic Pulley, 36" wide 12" diam.

Crushers
10"x 7" Farrel Jaw Crushers, type A and B.
15"x 9" Farrel Jaw Crusher, type A.
10"x20" & 12"x24" Champion Jaw Crushers.
16"x10" Reliance Jaw Crusher.
24"x13" Farrel Jaw Crusher, type B.
24"x16" 2-Roll Corrugated Crusher.
42"x16" Traylor Crusher Rolls.
36"x30" American Smooth Crusher Rolls.
24" American Standard Disintegrator.
8" Traylor Bulldog & 3-K Gates Gyratorys.
No. 5 & No. 6 Williams "Jumbo" Hammermills.
No. 1½ Harosh Hammermill, 8"x8" feed.
32"x12" Smith Revolving Screen, Dust Jacket.
4'x30' American Std. Dryer, 5/16" plate.

Screens
3'x5' 1-deck Multirap Vibrating, dry or wet.
3'x6' 1-deck Leahy Vibrating, A.C. motor.
4'x6' 2-deck & 3-deck Leahys, with motor.
4'x8' 2-deck Robins Vibrating.
4'x5' & 4'x7' 1-deck Hummer Magnetic Vibr.
15-cycle Tyler Generator for Hummer Screen.
No. 30 Telsmith Rotary Grizzly, 7/8" rings.
5'x20' Revolving type, On Trunnions.

Miscellaneous
40-hp. 2-drum National Dragline Elec. Hoist.
30-hp. 1-drum Mead-Morrison Elec. Hoist.
15-hp. 1-drum Lidgerwood Gasoline Hoist.
15-hp. Sprague 10-ton Electric Car Puller.
6x8 1-R Air Compressor, skids, Waukesha Eng.
35-ton Tank Scale & 1-ton Kron Dial Scale.
½-yd. Koehring Mixer. Flywheels up to 8'.
1-yd. Telsmith Dewatering Tanks.
Telsmith 1-screw Washer, with Motor.
30" & 36"-g. Locomotives & 24"-g. Flat Cars.

G. A. UNVERZACT, 136 Coit St., Irvington, N. J.

12" Steel Dredge Outfit with 390 HP motor.
1 yd. Cableway-Thomas Hoist—55 HP motor.
Gyratory Crushers: 12x46" & 36" TY Traylor.
10" Newhouse, 6, 9, 10K & 18N 36" Allis-Chalmers, Motor Driven.
Jaw: 10x30", 12x26" roller bearing Champion, 10x42" Acme, 15x36" Universal & Diamond, 24x36" Farrell & 42x48" Traylor.
Double Roll: 18x20" McLanahan, 30x30" & 42x16" Traylor.
Symons Cone: 2' coarse & fine bowls. 3' & 4' coarse bowls.
Barber Greene & Haiss Bucket Loaders.
21—1½ yard 36" Gauge Atlas V Shape Dump Cars, Excellent Condition.
No. 0 Raymond Pulverizer complete.
One-70 ton std. ga. Lima Shay Rebuilt.
One-70 ton Amer. std. ga. Switcher.
Diesel Engines: 90 & 100 HP Fairbanks.
50 HP Caterpillar and 71 HP Hercules.
175 HP Waukesha Gaso. & Natl. Gas.
5x5" Weinman Acid-resisting Cent. Pump.

MID-CONTINENT EQUIPMENT CO.
Pa. 2290 710 Eastgate St. Louis, Mo.

FOR SALE—REBUILT EQPT.

BAY CITY Model "S" combination 1 yd. shovel, crane & dragline.
UNIVERSAL-LORAIN Mod. 35—½ yd. comb. shovel, crane, dragline.
P & H Model 450—1 yd. Shovel.
KOEHRING #1—¾ yd. crane & dragline. Can furnish ¾ yd. Shovel Front.
HEYWARD—1½ yd. clam shell bucket.
WILLIAMS—½ yd. clam shell bucket.
INDUSTRIAL WORKS—25 Ton—8 wheel steam Loco. crane—50 ft. boom.
WHITCOMB Model CS-4—4½ Ton 24" Gauge Gasoline Locomotive.
3—**PLYMOUTH** Model FL-4 ton 24" Gauge Gasoline Locomotives.
DAVENPORT 22 Ton—4 Wheel saddle tank Type—Std. Ga. Loco. Cyl.—11"x16".
VULCAN—33 ton—4 wheel saddle Tank Type—Std. Ga. Loco. Cyl.—13"x18".
CH&E #11—Triplex Road Pump.
NOVO—40 H.P. Gasoline D.D. Hoist.
CARRY-ALL TRAILERS—10 to 30 Ton.
10—**BUDA** Model 119 and Model 19-L motor section cars for standard gauge track, Buda air cooled gasoline motor.

Other Type of Equipment, Too

SOUTHERN IRON & EQUIPMENT COMPANY
Plant and General Offices: ATLANTA, GEORGIA

WANTED

For Defense Projects!

No Recapture, Will Purchase or Rent

15—**BULLDOZERS,** 50 H.P. up. Caterpillars preferred but will consider any good make.
6—**CRANES,** with or without clamshell and drag line buckets.
4—**DRAGLINES,** 2-yd. to 5-yd. w. 60' to 100' Booms.
5—**LOCOMOTIVE CRANES,** 15 tons, 25 tons, 40 tons, Sta. Ga.
6—**GRADERS,** Caterpillars, other standard makes.
20—**TRACTORS,** with scrapers. Prefer caterpillar RD8s and D8s with 12-yd. and larger scrapers. Will consider other makes.
6—**TRAILERS AND TRAILER WAGONS.**
10—**TRUCK CRANES,** any make, ⅜ yd. up.
25—**TRUCKS,** Mack and other standard makes, in good condition.

We are interested in the purchase or rental of all the above if available immediately or for early future delivery.
Also interested in **all kinds of excavating and transporting equipment** if in first class condition.
Please furnish complete information including make, model, capacity, serial number, condition, location and prices, either for rental or purchase.

PUBLIC WORKS EQUIPMENT COMPANY, INC.
24-19 Forty-Fifth Street
Astoria, Long Island City, N. Y.
Tel. AStoria 8-5220

FOR SALE

2—Allis-Chalmers Type "K" Crushers No. 5 and No. 6.

1—Gruendler Crusher 18" x 16" Single Roll.

1—1941 Diamond "T" Dempster-Dumpster.

1—Fleury Hoist, Single Drum.

1—Raymond Mill Complete with No. 1 Automatic Pulverizer, No. 11 Fan, Cyclone Collector and Whizzer Separator. New 1941 and never used.

Address All Inquiries to BOX 603

PIT AND QUARRY PUBLICATIONS
538 S. Clark St. Chicago, Ill.

FOR SALE

BAR BENDERS

4 Benders—operate on Compressed Air, capacity 1¼" bars.
1 Electric Bar Bender—1¼" capacity. Complete with 220 Volt 5 H. P. Motor.

COMPRESSORS

1 Ingersoll-Rand Compressor 880 Cu. Feet. Complete with 440 V. 152 H. P. AC Motor and Starter. Air Receiver. Endless 50' Leather Belt.
1 Ingersoll-Rand Air Compressor 1240 Cu. Feet. Requires 200 H. P. Motor.

DERRICKS

3 All-steel Derricks. 50 Ton capacity. 95' Boom. Complete with Guys, Sheaves and either Electric or Steam Hoist.

GLAZER IRON & METAL COMPANY
520-610 Chamberlain Street
Knoxville Tennessee

WANTED

25-35 Ton Loco Cranes
10 Ton 87" Bridge Cranes
15 Ton 60" Bridge Cranes

State Age, Full and Complete Description with Price.

Address replies to
BOX 503

PIT AND QUARRY PUBLICATIONS
538 S. Clark St. Chicago, Ill.

WANT TO BUY

2—40 to 60' Portable Conveyors.
20 Ton or Heavier Gas Locomotive.
80 to 125 H.P. 3 Drum Hoist.
Locomotive Crane.
2—10,000 gal. or 1 Large Storage Tank.
2 Miles Portable Track.
24x36 Jaw Crusher.
100 ft. Boom Whirley Crane.

Address replies to
BOX 509

PIT AND QUARRY PUBLICATIONS
538 S. Clark St. Chicago, Ill.

WANTED

A large Michigan Quarry has openings for a Master Mechanic and several Electric Shovel operators. Prefer Master Mechanic familiar with Diesel and Electrical maintenance and repair. Shovel operators must be able to maintain and repair both electrical and mechanical. Year around work. In answering give detailed statement of experience, reference, compensation expected. Address

Box 609
PIT AND QUARRY PUBLICATIONS
538 S. Clark St. Chicago, Ill.

WANTED

Executive to take full responsibility of Sand and Gravel Plant involving river operations. Must have technical education or equivalent, with ability to plan and supervise operations, including production and maintenance. Experience in managing river fleet essential. Applicant state age, full details of past record, experiences, earnings and education in first letter. Address inquiries to

BOX 512
PIT AND QUARRY PUBLICATIONS
538 S. Clark St. Chicago, Ill.

WANTED

Two 3 drum steam hoists, American, Lidgerwood or Lambert preferred. 12" x 14" cylinders or larger.

H. J. BRANIGAN, INC.
17 State St. New York, N. Y.
Bowling Green 9-3896

WANTED TO PURCHASE

Locomotive cranes 15 to 50 ton capacity. Also any gantry or crawler cranes. Let us know what you have for sale.

THE ACME EQUIPMENT COMPANY
14057 Schaefer Highway
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1—920 CEDARAPIDS Portable Gravel Plant.
1—936 CEDARAPIDS Portable Gravel Plant.
1—1536 CEDARAPIDS Jaw Crusher, on truck.
1—18 x 24 Roll Crusher, cheap.
1—HAISS Bucket Loader.
1—Model 42 BARBER-GREENE Loader.
1—One yard BROWNHOIST Material Bucket.
1—One yard Material Bucket, cheap.
1—150 ton Steel Storage Bin.
1—Complete Sand & Gravel Washing Plant.
1—15 ton HOWE truck Scale.
1—VULCAN 7-ton 36" Ga. Locomotive, Diesel.
2—VULCAN 16-ton 36" Ga. Locomotive, Gas.
1—PLYMOUTH 16-ton 36" Ga. Locomotive, Diesel.
1—¾ yard BYERS Shovel & Crane.
1—McMYLER Crane, 40' Boom, Diesel.
1—¾ yard GENERAL Invincible trench hoe.
1—INTERNATIONAL "40" Diesel Tractor & Bulldozer.
1—CLETRAC "80" Gas tractor with Gar Wood Bulldozer & 12 yard Austin-Western Carry-All.
1—CATERPILLAR "60" tractor with Cable Control Bulldozer & 5YD. Austin-Western Carry-All.
1—ADNUN Black-top Paver, New 1941.
1—EUCLID trac-truk 8-10 yard.
1—CEDARAPIDS 3000 Portable Hot-Mix Plant.

PATTERSON EQUIPMENT COMPANY
1468 West 9th Street Cleveland, Ohio

FOR SALE

1—Raymond 5 Roll, High Side Roller Mill, complete, latest type, with oil journals, exceptional condition.
1—Raymond 3 Roll, High Side Roller Mill, complete.
3—Rotary Kilns, 8' x 90', 7' x 120', 8' x 125'.
7—Rotary Dryers, from 3' x 10' to 7' x 60' and 8' x 60'.
5—Rotex and Tyler Screens, 1, 2 and 3 deck.
2—Belt Conveyors 16" x 50' and 56'.
6—Gould Pyramid Pumps, 2" to 4".
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4—Williams, Jeffrey, Gruendler Hammer Mills.

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12 Ton NORTHWEST 50 Ft. Boom Gas.
12 Ton KOEHRING 45 Ft. Boom Gas.
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25 Ton BROWNING & 30 Ton AMERICAN Locomotive.
25 Ton LINK BELT K-48 Electric, 70 Ft. Boom.
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1¼ Yd. BUCYRUS 41B Steamer.
1½ Yd. Lima 750 Diesel.
1½ Yd. KOEHRING 601—Gas.

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20—Std. Ga. 12 Yd., 16 Yd., 20 Yd. & 30 Yd. Cap.

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6'x22" HARDINGE CONICAL Pebble Mill.
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3½x8 & 5x7 Air Swept Tube Mills.
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5½x20 Smidth Tube Mill Mang. Lining.
5½x18 P & M Tube Mill Silex.

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36x60 Fairmont Single Roll.
36x20 Diamond Double Roll.
24x24 & 36x16 & 36x20 Diamond Double Roll.

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30x10 Gruendler Roller Bearing.

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4—Nos. 5, 3 & 6 Austin Gyratory.
2—Traylor T-12 Bulldog Gyratory.
8 in. Traylor T, Gyratory, Telsmith No. 9.
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6, 10 & 13 Inch Superior McCully.
KENNEDY: Nos. 19, 25, 27, 39 & 49.
16" Traylor.
7 Ft., 5 Ft., 4 Ft. and 3 Ft. Symons Cone.

DRILLS
4—SANDERSONS 14 & LOOMIS 44.
7—Ingersoll-Rand Wagon Drills, FB & M2.
29T ARMSTRONG Well Drill.

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7 Gasoline 15, 40, 60 & 100 H.P.
17 Steam 7x10, 8½x10 and 10x12.
8 Electric 20, 35, 50, 60, 100 & 150 H.P.

HAMMER MILLS
4 Jeffreys: 24x18-A, 36x24-B, 42x36-E & 42x48-B.
Williams No. 1 Jumbo Jr., & No. 6 Universal.
Nos. 4, 6 & 8 Williams Jumbo.
No. 36 Am. Ring Roll.
Gruendler No. 6X.

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400 Bbl. Portable BUTLER Bulk Cement Bin with Fuller Full Automatic Electric Push Button Weigh Batcher.

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100 K.W. RIDGWAY 3/60/2200-250-275 volt.
150 K.W. GEN. ELEC. 3/60/2200-250-275 volt.
200 K.W. RIDGWAY 3/60/2200-250-275 v., 900 rpm.

DIESEL GENERATORS
240 K.W. F.M. 3/60/2300 v.
300 K.W. Worthington 3/60/2400 v.
125 K.W. F.M. 250 v. D.C.

RAYMOND MILL
5 Roll High Side.

CONVEYOR PARTS
BELT: 1000 Ft. 60 In., 700 Ft. 42 In., 600 Ft. 36 In., 800 Ft. 30 In., 1642 Ft. 24 In., 517 Ft. 20 In., 207 Ft. 18 In., 1000 Ft. 14 In. & 18 In.
IDLERS: 36 In., 30 In., 24 In., 20 In., 18 In.
Head & Tail—Pulleys—Takeup for all sizes.
Steel Frames: 2,000 Ft. 24 In., 30 In. & 36 In. Sections.

ROTARY DRYERS AND KILNS
36 In. x 20 Ft., 3 Ft. x 30 Ft., 4 Ft. x 30 Ft., 54 In. x 30 Ft., 42 In. x 24 Ft., 5 Ft. x 30 Ft., 5 Ft. x 18 Ft., 5 Ft. x 60 Ft., 6 Ft. x 60 Ft., 6 Ft. x 70 Ft., 70 In. x 40 Ft., 5x30 & 8x84 Double Shell Dryers, 8x110, 7½x100, 8x125 & 10x20 Kilns.

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GUY: 8 Ton 85 Ft. Boom, 15 Ton 100 Ft. Boom, 20 Ton 115 Ft. Boom, 50 Ton 100 Ft. Boom.
STIFF LEG: 5 Ton 70 Ft. Boom, 15 Ton 100 Ft. Boom, 25 Ton 100 Ft. Boom, 75 Ton 135 Ft. Boom.

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DIESEL: 7—4½, 8 and 15 Ton 36 & 42 In. Ga.
GASOLINE: 3 Ton, 5 Ton, 8 Ton, 12, 14 & 30 Ton.
STEAM: 6 Ton, 20 Ton, 40 Ton, 60 Ton & 80 Ton.
ELECTRIC: 2 Ton, 5 Ton, 8 Ton, 17 Ton & 40 Ton.

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VIBRATING: 2x4, 3x6, 2x8, 3x8, 3x5, 4x5, 4x8, 4x10, 48x72. HUMMER, ROTEX, NIAGARA & ROBINS. LINK BELT & HURON.
REVOLVING: 3x12, 3x16, 3½x18, 3x24, 4x16, 4x20, 4x23, 4x24, 5x30, 5x20, 6x20.

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4 LINK-BELT A-60 In. Classifiers.
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21 Worthington 169 Drifters.
12 Worthington 180 Drifters.
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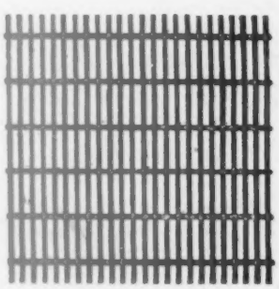

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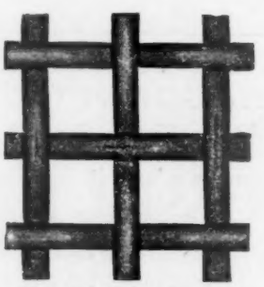

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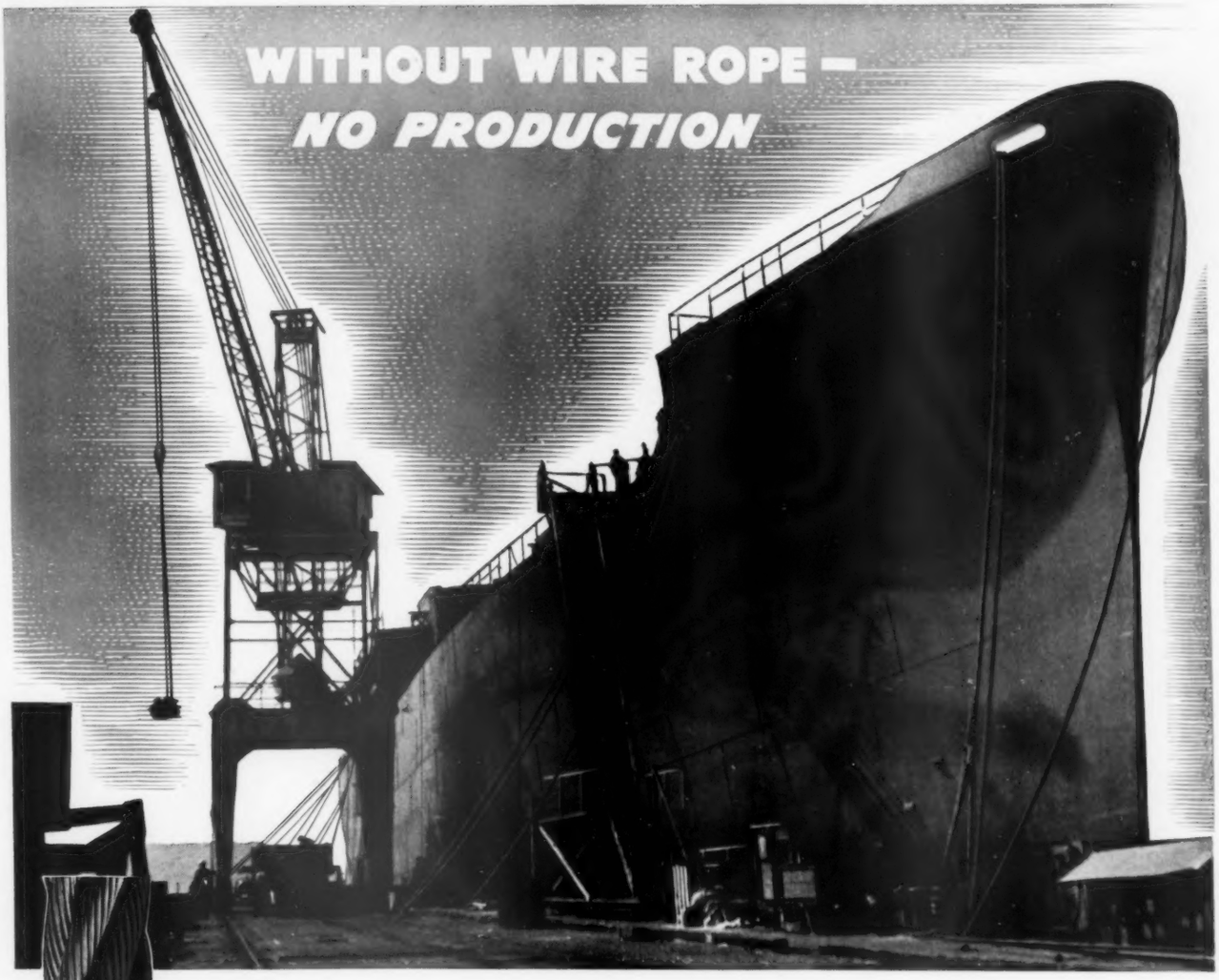

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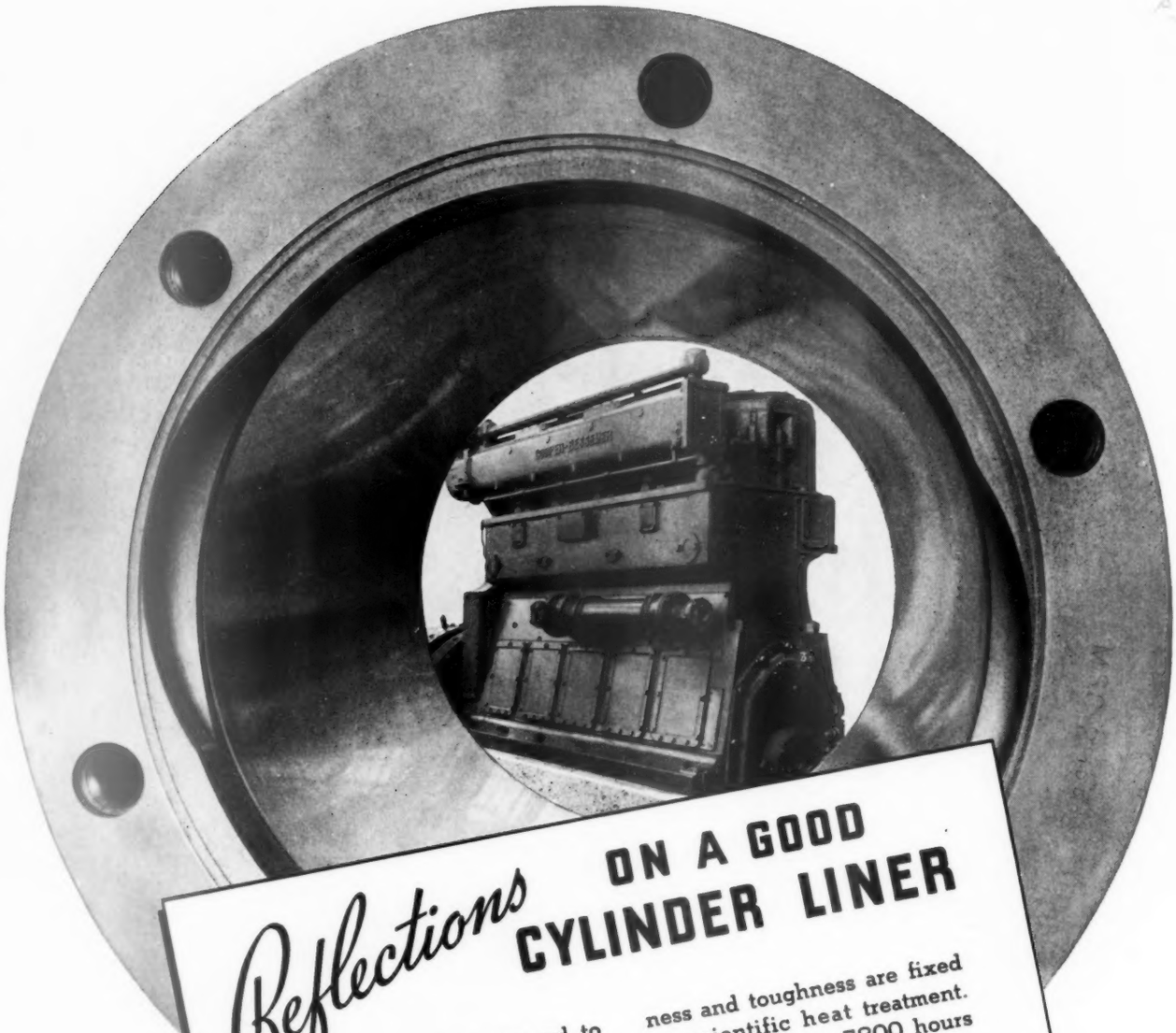

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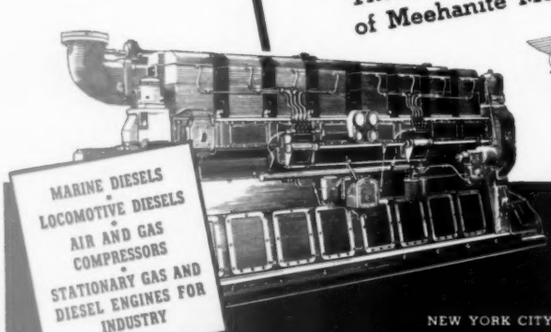

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